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Translation—Abstract.

On the Nature and Therapy of Grass Staggers.

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I.—INTRODUCTION.

Information on this subject has already been given by the author[1], while later on[2] in a paper accompanied by graphs[3], the abnormalities which appear in the content of Ca., Mg. and inorganic phosphoric acid of the blood serum were recorded, as well as those found in the content of Ca-ions, and ultra-filtrable magnesium and inorganic phosphoric acid of the blood serum, during milk fever and grass staggers. These graphs demonstrated very clearly how greatly the disturbances of equilibrium in the blood-serum differ in grass staggers from those in milk fever. We also examined cases, recorded by us as doubtful ones, which, on account of the examination of the blood, and for other reasons, we could neither consider to be typical grass staggers nor yet typical milk fever. Later on we shall revert to this.

To solve the problem of the etiology and pathogenesis of grass staggers would be of great value, as this disease becomes more and more frequent. On account of the violent nature of the disease, the recovery of a certain percentage will not be possible, seeing that the veterinary surgeon cannot be on the spot in time; besides this, the violence of the attacks is not infrequently so great, that little success can be expected to result from therapeutic intervention.

The first question we have to deal with here is, what do we mean by grass staggers?

For the present let us define the disease as follows:—Grass staggers is characterised by sudden, rapid attacks, often terminating fatally, which appear almost exclusively in milk cows, and then mostly during the first days that the cows are out on grass. These attacks, which were formerly only known in a small part of the Netherlands, have occurred within recent years in all the provinces of this country. It has likewise been observed that analogous attacks have greatly increased in other countries and continents during the last years, among others in New Zealand[4].

Although in general it makes its appearance chiefly during the first days when the cows are out on grass, yet these attacks also occur at other periods; for instance, in the autumn, likewise now and again in the cow-house, or else directly after the animals have been taken from the cow-house to the pasture, these cases being either identical with or closely related to those above described. Discrepancies in the symptoms and in the blood composition may be found; attacks bearing a semblance to those of grass staggers can certainly arise from very different causes, yet seemingly a great number of the cases are identical in their nature.

As regards the symptoms, these are their characteristics:—The first derangements are: twitching of the muscles, sometimes only on certain parts of the body[5], nervousness, the refusal to graze with other animals, unsteady locomotion, widespread hind limbs; later on violent excitation, and tetanic contractions of the limbs are manifested, accompanied by other types of cramp, such as: gnashing of the teeth, rigidly closed jaws, and rolling of the eyeballs. Further, frothing of the mouth and sometimes bellowing are to be observed. The pupils of the eye also change (to all appearances they are contracted), the animal seeming to be blind. After the animal has fallen down, the violent movements of the limbs continue and it often dies in convulsion. The excitation is sometimes followed by a comatose condition.

Other derangements may be added to the above, among others a frequent and sometimes throbbing pulsation of the heart; further, the digestive organs seem to be involved in the attacks, in so far that there is not only a poor appetite but constipation is also manifested, which on recovery develops later on as diarrhœa. On recovery the appetite during the first few days is frequently very poor. The milk yield, as may be expected, is likewise disturbed. At times it even decreases until it is very scanty; at others there is a gradual and not too great reduction. It seems that in the latter case one can make an unfavorable prognosis.

All these symptoms will not always be clearly existant. A less violent form, or one that is not pure, can be the cause of this. Cases occur, it seems, in which there is no distinct tetanic contraction of the limbs, and yet gnashing of the teeth, for instance, or staring eyes may be observed. Grass staggers is not directly associated with parturition nor with lactation; now and again it is manifested in dry cows that are not pregnant; it has even been observed in a calf of eight months old. Likewise it seems that it has been manifested in bulls. Nevertheless, it is quite presumable and also not improbable, that the animals are more susceptible to the etiological factor shortly after parturition. According to information obtained, the susceptibility to grass staggers is greater for those cows that are taken to the meadows soon after calving.

The autopsy picture seems to vary according to whether the attacks were of shorter or longer duration. We have been informed that dark red flesh and emphysematous enlarged lungs were found, following on a very acute and

sudden attack that had terminated fatally. After attacks of rather longer duration the muscles, it seems, were degenerated, pale and moist, and petechiæ, and sometimes hæmorrhage, were present in the serous tissues. It is questionable, however, whether the death agony had not some influence on the results of this autopsy. It is well to observe that hyperæmia and hæmorrhagic conditions have also been found in animals that suffered from parathyroidprive tetany, that is to say, from experimental tetany.

It quite stands to reason that one associates the etiological factor—that is to say, the principal cause—with the fact that the attacks occur chiefly during the first days that the cows are out on grass. Experience likewise teaches us that the greatest increase of frequency is to be observed in those districts where cattle farming has been more intensively carried on, within recent years, than was formerly the case—and, at that, mostly on sandy soil.

For this reason we have to try to find out what connection does exist between the altered methods of cattle-farming and the increasing frequency of this disease.

The veterinary surgeons who treat many cases of grass staggers in these districts are of opinion that it is caused by the heavy manuring of the pasture-land. Most of them express themselves very emphatically on this point. Therefore, we have to investigate whether one of the factors of the intensifying of cattle-farming occasions grass staggers, and if so, which one of these.

Consequently we must investigate whether it is due to the heavy manuring of the pastures producing an injurious grass[6], or whether too excessive stall-feeding can be the cause of susceptibility, which results in the manifestation of grass staggers in the meadows.

In 1928 I pointed out that attacks such as those in grass staggers can also appear under the influence of certain external factors, undoubtedly after a condition of labile equilibrium has already set in, *i.e.*, if overfeeding, especially with foods rich in protein, has caused a labile condition, factors, such as a sudden, cool temperature, may be expected to give rise to an acute condition.

It is possible that in one case the grass, and in another the winter feeds are the principal causes, *i.e.*, give rise to the labile state. In both cases this condition must then have arisen *via* the intestinal canal; in other words, an intoxication arising from the intestinal canal must be assumed. The question now arises whether such intoxications can produce symptoms as those found in grass staggers.

It is quite probable that we are confronted with a simple intoxication and, at that, with one connected with the nervous endocrine system, considering its sudden manifestation, the nature of the functional disturbances, and the quick response and success of one single therapeutic treatment.

Now, undoubtedly, it is also quite conceivable that analogous symptoms can be produced by quite other intoxications than those caused by rich food or by grass of some special composition. One may assume that other poisons, chemical or bacteriological—thus infections—(for instance metritis, mastitis and from fungus poisons)—can produce analogous symptom-complexes[7].

In cases where the intoxication is produced in quite another way—for instance, by bacteria or their products—the derangements will probably not be quite the same, and therapeutic intervention will presumably not lead to the same results. Indeed, it is difficult to suppose that in cases of real infection a radical recovery can be effected within a few minutes, by means of one single injection of a salt such as calcium-chloride, as happens in grass staggers proper.

It may be mentioned that we met with attacks with symptoms resembling those in grass staggers, in which the etiology was not the usual one and wherein the calcium-chloride therapy failed.

2.—The Chemical Blood Examination.

As a rule, we found a distinct difference between blood-serum milk fever and grass staggers.

In both diseases there is usually a decrease of the Ca-content; the average decrease in milk fever is greater than in grass staggers. This is proved at greater length in the tables. Hhe minimal figure in grass staggers was 4·1 mg. per cent.; in a small number of cases we have found a value which coincided with the lowest amounts for normal animals. (See Table I.)

It is, however, difficult to say with certainty whether a normal Ca-value occurs sometimes in grass staggers, for in some cases a mammary inflation had previously been applied. Has this taken place shortly beforehand, then the Ca-content of the sample will certainly not present us with an accurate idea of what was the Ca-content of the blood when the attack occurred.

In 1929 we found that the average calcium in the blood-serum of milk fever patients was 4·35 mg. per cent.; in that of grass stagger patients, 6·65 mg. per cent. There is likewise a greater decrease in the number of calcium-ions in milk fever than in grass staggers. We found that the average was resp. 0·44 mg. per cent. and 1·18 mg. per cent.; while the average for normal animals amounted to 1·65 mg. per cent.; thus a ratio of *circa* 1 : 3 : 4.

Generally there was also a very distinct difference between the amount of inorganic phosphoric acid in the blood of milk fever patients and in that of animals suffering from grass staggers.

In milk fever it is frequently less than 2 mg. per cent.; the average was 2·16[8]—therefore considerably lower than is usually the case in normal animals (for normal animals the average was 4·57; it varies between *circa* 4 and 6 mg. per cent.), and likewise more than in normal cows that have just calved. Now, in grass staggers we found the average amount of inorganic phosphoric acid about the same as that of normal cows; normal, low and also high amounts are to be found[9]; in other words they fluctuate, and are far more fluctuating than in normal cows.

Mammary inflation, which has been preceded in some cases by the taking of blood samples, may in those cases have increased the P-content. As regards the inorganic phosphoric acid, a labile condition seemingly exists in grass staggers.

The inorganic phosphoric acid is absolutely ultra-filtrable, both in the case of normal animals as well as in the blood of cows suffering from the one of the two syndromes. (See Table II.)

A very remarkable abnormality in the composition of the blood serum in grass staggers is the extremely low amount of magnesium.

Table I.

BLOOD-SERUM OF COWS SUFFERING FROM GRASS STAGGERS.

Mg. in 100 c.c.			Ratio of the Equivalents (the sum = 100).		
Ca.	Mg.	P.	Ca.	Mg.	PO_4
4·5	0·97	2·1	51·1	18·1	30·8
4·3	0·37	2·5	52·8	7·5	39·7
8·5	0·30	4·3	59·0	3·4	37·6
7·4	0·20	3·9	58·0	2·6	39·4
5·2	0·31	2·6	57·4	5·6	37·0
8·2	0·22	3·1	65·3	2·9	31·8
8·1	0·30	3·6	61·2	3·7	35·1
7·6	0·44	8·0	40·8	3·9	55·3
7·4	0·50	7·2	42·3	4·7	53·0
6·7	0·36	5·5	46·6	4·1	49·3
8·8	0·16	4·3	60·0	1·8	38·2
4·2	0·34	2·3	54·4	7·2	38·4
6·3	0·18	2·3	65·9	3·1	31·0
5·3	0·33	1·4	69·3	7·1	23·6
8·7	0·90	4·2	56·2	9·5	34·3
7·45	0·46	7·0	43·2	4·4	52·4
6·1	0·39	5·7	43·2	4·6	52·2
6·1	0·45	5·8	42·6	5·1	52·3
5·0	0·41	3·4	49·7	6·7	43·6
7·6	0·47	5·0	51·3	5·2	43·5
9·45	0·45	7·0	49·2	3·8	47·0
7·1	0·52	5·2	48·4	5·8	45·8
6·0	0·78	5·8	40·7	8·7	50·6
6·9	0·24	4·3	53·7	3·1	43·2
5·2	0·23	4·6	45·2	3·3	51·5
6·0	0·32	4·0	51·3	4·5	44·2
4·5	0·10	5·6	37·9	1·4	60·7
9·5	0·22	4·5	60·6	2·3	37·1
6·7	0·28	3·7	56·2	3·8	40·0
6·1	0·38	2·2	63·8	6·5	29·7
8·7	1·16	7·1	44·0	9·6	46·4
8·0	0·69	2·9	62·1	8·9	29·0
6·8	0·49	3·3	57·3	6·8	35·9
4·1	0·47	4·0	40·9	7·7	51·4
6·9	0·36	4·5	51·9	4·5	43·6
4·8	1·0	1·9	53·9	18·5	27·6
4·9	0·7	3·3	47·5	11·2	41·3
8·0	0·56	4·4	54·8	6·3	38·9
7·0	0·42	7·3	40·9	4·0	55·1
3·9	0·23	2·5	52·0	5·0	43·0
7·4	0·6	9·6	35·6	4·8	59·6
9·1	0·82	4·0	58·3	8·6	33·1
5·6	0·26	3·9	50·6	3·9	45·5
5·4	0·34	1·5	68·4	7·1	24·5
4·5	0·49	5·0	38·2	6·8	55·0
5·5	0·43	4·8	44·4	5·7	49·9
6·1	0·48	2·6	59·6	7·7	32·7
8·9	0·43	6·3	50·1	4·1	45·8
7·3	0·31	3·8	57·4	4·0	38·6
4·9	0·36	4·2	44·9	5·4	49·7
7·7	0·68	6·0	46·5	6·7	46·8
8·35	0·82	3·8	57·2	9·2	33·6
8·5	0·43	3·7	60·9	5·1	34·0
8·0	0·39	3·3	62·1	4·9	33·0
4·3	0·54	2·9	48·2	9·9	41·9
6·65	0·455	4·33	51·2	5·6	43·2

In normal animals this is about 1·66 mg. per cent; in 1928 and 1929 we found figures in milk fever which are somewhat higher than normal, in 1929 the average was 2·19 mg. per cent; in grass staggers, on the other hand, the average was 0·455 mg. per cent. The abnormality in the magnesium content is very conspicuous.

Table II.

ULTRAFILTRATES OF BLOOD-SERUM OF COWS SUFFERING FROM GRASS STAGGERS.

Mg. in 100 c.c.			Ratio of Equivalents (the sum = 100).		
Ca ions.	Mg.	P.	Ca ions.	Mg.	PO.
1·45	0·8	5·4	14·9	13·5	71·6
1·16	0·45	8·0	9·4	6·1	84·5
1·77	0·87	5·04	18·2	14·7	67·1
1·16	0·26	5·3	13·8	5·1	81·1
2·10	0·78	3·87	25·1	15·3	59·6
1·10	0·31	6·6	10·9	5·0	84·1
1·01	0·20	2·7	21·0	6·8	72·2
1·09	0·09	2·3	25·9	3·5	70·6
1·22	0·27	5·7	13·7	5·0	81·3
1·34	0·20	5·7	15·0	3·7	81·3
1·37	0·55	5·8	14·4	9·2	76·4
1·37	0·20	4·3	18·9	4·6	76·5
0·71	0·14	4·6	10·4	3·3	86·3
1·10	0·20	3·4	18·9	5·7	75·4
1·37	0·23	2·25	29·5	8·1	62·4
1·10	0·22	2·9	21·1	6·9	72·0
0·71	0·57	1·9	17·3	22·9	59·8
0·71	0·29	2·34	17·0	10·9	72·1
1·01	0·39	4·0	14·8	9·4	75·8
1·10	0·11	2·88	22·0	3·6	74·4
0·92	0·25	3·06	17·4	7·6	75·0
1·18	0·35	4·19	16·3	7·)	75·8

We found a Mg.-content which not infrequently is *circa* 1/8 à 1/10 of the normal. In eleven of the 55 cases of grass staggers it was lower than 0·30 and in 6 cases 0·33-0·30, while the highest amounts were: 0·97; 1,-and 1·16 mg. per cent.

The Mg.-contents in the ultra-filtrates in grass staggers (21 cases) were on an average 0·35 mg. per cent.; the average in normal cows (11 cases) was 1·24; the average in milk fever patients was 1·8 mg. per cent.

Therefore the value for ultra filtrable Mg. in normal and sick animals is on an average *circa* 75-80 per cent. of the total.

Besides investigating the Ca., P. and Mg. of the blood-serum of animals suffering from grass staggers, milk fever or from related syndromes, as well as from normal cows, we also determined the amount of K., Na and C1 of the blood serum.

As regards the K-content, no abnormal amount was found in 1929 (we examined 12 cases of grass staggers). According to my opinion, we may draw the conclusion that there is nothing out of the ordinary in the amount of potassium in the case of grass staggers.

It appeared that in grass staggers the Na-content was subject to fluctuations, probably greater than in the case of normal animals.

Our Na-values of the blood-serum of normal cows range between 303 and 349 mg.Na. p. 100 c.c. (resp. 333, 303, 318, 345 and 349). In 303 and 349 grass staggers patients we found amounts between 282 and 377 mg.Na. p. 100 c.c. (331, 352, 363 (377) 329, 318, 282, 372 and 353).

In cases of atypical grass staggers (so-called doubtful cases) we found: 367, 360 and 333.

In two cases of milk fever 349 and 345 mg.Na. per 100 c.c. blood-serum was found. Therefore although it is conspicuous that in grass staggers the Na. is subject to fluctuations, yet it is not certain that such pronounced abnormalities are to be found concerning the Na.-values as in those of the Ca.P and Mg.-contents of the blood-serum of cows suffering from milk fever and grass staggers.

The same can be said of the Chlorine as of the Na. In normal cows we found Cl.-values of the blood-serum between 319 and 332 (resp. 326, 327, 332 and 319) mg.Cl per 100 c.c. blood-serum, the average being 326.

In grass stagger patients the amounts ranged between 300 and 326 (resp. 310, 341, 322, 300, 362 and 317). In two doubtful cases the amount was 312; in two milk fever patients 344.

The results of the K,Na and Cl-determinations did not give us any inducement to continue our investigations in this direction. That the ratio $\frac{\text{K.-Na.}}{\text{Mg.-Ca.}}$ in grass staggers is another one than in normal cows is clear, seeing that Mg. and Ca. are both reduced in this disease, while the amount of the two others (K. and Na.) is normal, or relatively less abnormal.

We draw attention to this because some are of opinion that this ratio is of importance.

We found that in normal cows the ratio is about 31; in grass staggers, however, between 42 and 51. In grass staggers the ratio $\frac{\text{Ca.}}{\text{P.}}$ is also frequently modified. The appearance of tetany has often been associated with this ratio *viz.*, it has been taken for granted that, when this ratio had decreased below a certain value, tetany would be manifested.

3.—The Urine-Examination in Cases of Grass Staggers.

The chemical urine-examination in grass staggers has produced rather constant results; at least as far as some of the ingredients are concerned. The calcium-content is nearly always low in comparison to normal animals[10].

As a rule it is *circa* 20 and remains lower than *circa* 40 mg. p. L. We found this in 18 urine samples. In one case the Ca-content was high, *viz.*, 202 mg. p. L. In this animal the Mg.-content of the urine was also very abnormal for a grass stagger patient, *viz.*, 82 mg., while the blood samples likewise contained a very abnormal composition for grass staggers (Ca. 9·6 and 10·7); P. (inorg.) 4·5 and 4; Mg. 1·9 and 1·02). This was not a pure case of grass staggers.

The phosphoric acid content in the urine of grass stagger patients was in most cases—12 cases—low, *i.e.*, normal. However, in five cases it was high, *viz.*, between 1,470 and 285 mg. P_2O_5 p. L. or 640 and 125 mg. P.[11]. These five cases may all be regarded as being more or less atypical grass staggers, both because of the Mg.-content of the urine, as well as on account of the contents of the blood-serum. This contained in these five cases in mg. per cent. of Ca., 6·1, 7·4, 7·45, 6·1 and 8, of P. (inorg.) 5·4, 7·2, 7·0, 5·7 and 4·4, and of Mg. 0·5, 0·6, 0·2, 0·4 and 0·56.

It may be mentioned that we found that the urine of cows suffering from attacks which were neither typical grass staggers nor typical milk fever, nor yet pure paraplegia *post-partum*, often manifested a high phosphorus content of the urine.

The Ca-content of these urines was rather normal, *viz.*, as a rule between 15 and 20 mg. Ca. p. L.

From the information given here above on the phosphoric acid content of the urines, it seems probable that there is some relation between grass staggers, perhaps especially atypical grass staggers and indigestion, as these figures are characteristic for acute indigestion.

The Mg.-content of the urine of patients with purse grass staggers is of especial interest. Let us for the time being accept 10 mg. Mg. per L. as being the normal level downwards (little is known on this subject), then in 15 cases of grass staggers an abnormally low Mg.-content was present. Therefore, a low magnesium in the blood was usually accompanied by a low Mg. in the urine. Under the pure grass stagger cases was not a single one in which the urine Mg. did not run low. In five of these samples no Mg. whatever could be demonstrated. The case of atypical grass staggers, mentioned above, with its high urine Ca., and normal blood content, was also an exception to the typical stagger cases as regards the urine Mg.

It is worth noting that, in so far as the other urine ingredients are concerned, *viz.*, P. and Ca., no distinct connection generally exists between urine and blood. For instance, in milk fever we sometimes found a high urine-Ca. and a low blood Ca.

As for Mg., this connection is better; in accordance with this, a high urine Mg. frequently being found in milk fever (for instance between 50 and 80 mg. per L.).

A remarkable difference between the urine of grass stagger and milk fever patients is, that the former almost always contains small quantities of protein, while this is an exception in milk fever.

Seeing that such feeble protein reactions are frequently manifested in normal cattle, especially in the autumn (when the cows are still out on grass), it is prudent for the present not to attach too much importance to this point.

4.—On the Etiology of Grass Staggers.

One of the most outstanding features of grass staggers is that, as has occurred for some few years, it appears so frequently in several parts of the Netherlands, where these attacks were formerly unknown.

It is likewise remarkable that abroad this disease also has increased steadily in the last few years. Reference has already been made to New Zealand.

The symptoms there seem to be quite similar to those we meet in with here. In New Zealand they say that the disease appears at a certain season, and manifests itself either before or after parturition, and then most frequently 14 days after, sometimes up to six weeks after calving[12].

We have seen that there is every reason to examine which of the factors in connection with the intensifying of cattle-farming is the principal cause of grass staggers; we must at the same time also keep the forcing of the milk-yield in mind.

In addition to a selection of the animals, this forcing takes place in two ways:—

1. by excessive stall-feeding,
2. by manuring the pasture-land and hay-fields more intensely.

Although one is in general inclined to blame the grass,

yet we must recollect that sometimes an attack of grass staggers is manifested directly after the animals have left the cow-house, so that grass cannot possibly be considered to be the cause.

Undoubtedly there is also reason to believe the factors that originate a labile condition play a rôle; *i.e.*, general enfeeblement, depletion, inadequate rations, an insufficient mineral supply and overfeeding (as a result of which toxic matters may be present in the blood); while one can, moreover, take external influences for granted—experience compels us in this direction—which, as it were, act as a last impulse effecting sudden functional disturbances; for instance, sudden changes of temperature, œstrus, emotions, fatigue, lassitude. So long as one or more of these circumstances do not occur, there are no serious derangements of the regulating-mechanism of the nervous-endocrine system, and the labile condition does not become acute. So, for instance, several veterinary surgeons are convinced that cold nights following on warm days produce grass stagger patients.

We shall presently see that external circumstances can influence the condition of the gastro-intestinal canal.

Of course, we must also think of individual differences.

Accepting one of the factors connected with the intensifying of cattle farming, then we shall have to admit that an intoxication, by means of the intestinal canal or an increased susceptibility to intoxication, is the primary cause of the violent nervous derangements in grass staggers.

Grass staggers occurs in our country most frequently in those springs in which there is a superabundance of young, rank, quick-growing grass. Such grass is, as a rule, very rich in proteins, and as a result the nutritive ratio is very abnormal (much too narrow)—for instance, 1·2½. The animals therefore consume very large quantities of proteins.

Grass staggers is also manifested now and then during winter, apparently more especially as the result of excessive feeding, amongst other foods, with pea-nut cake (meal) from hulled nuts, which is very rich in proteins (about 50 per cent.).

It may be expected that food which is too rich in proteins consumed in the pastures as well as in the stalls, is a source of risk for contracting grass staggers. That, therefore, not only a superabundance of grass proteins, but likewise of other kinds of proteins can be an etiological factor of the disease.

The fact that grass stagger patients sometimes manifest pica and that they are disposed to swallow soil, may perhaps be an indication that some necessary ingredient is lacking in the fodder. The same conclusion may be drawn from the fact that animals grazing in pastures which are strongly manured with nitrogen, will strip all the trees within their reach of their herbage until they are barren.

Seeing that in grass staggers the mineral metabolism is deranged and a lack of Ca. and Mg. exists in the blood, we must also question whether the intensifiying of agriculture will cause the risk of a deficiency of these minerals. Let me state from the first that impoverishment of the blood, as regards minerals, is not necessarily caused by a deficiency of Ca. and Mg. in the feed. The blood composition can undoubtedly manifest the abnormalities already mentioned, in consequence of derangements of the regulating-mechanism, which may arise quite independently of the mineral content of the fodder. It is not possible to say with certainty whether the abnormal mineral composition of the rations on which the animals are frequently fed during the winter play a rôle.

These rations often have a deficiency of lime, especially when little hay or when hay of a poor mineral composition is used, and large quantities of concentrates are fed while they contain little calcium and proportionately a rather large quantity of phosphoric acid.

It must be admitted that it is very improbable that an unfavourable mineral composition of the grass itself could be a factor of importance, as we have seen that it is shortly after the cows are first out on grass that the attacks occur.

At the most, one might for a moment imagine the possibility that the mineral composition of the grass gives the chyme a mineral composition, which increases the permeability of the wall of the intestines, but this is not at all likely.

Should it become evident that grass staggers occurs in the late summer and in the autumn in a period in which the grass is no longer in a vigorous condition, but has become covered with mould, as is often the case with plants suffering from a loss of vitality, then in such cases one might be inclined to think of the possibility of a mould intoxication.

A quite different noxiousness, which one might suppose to be the cause of the grass staggers, is this: That the potassium content of the grass is in some cases abnormally high, so that perhaps an unfavourable ratio of the ions, and likewise a decrease of the blood-Ca. could arise. Nothing definite can be said on this matter.

Once more we must revert to the unfavourable ratio of the minerals—especially Ca. and P.—in most of the protein-rich food supplies. Relatively they contain a large amount of phosphoric acid, and they are comparatively, and in an absolute sense, poor in lime. This can have an unfavourable effect on the stability of the organism. Recall to mind the experimental method, frequently put into practice, of making young animals rachitic by feeding them on rations in which the proportion of lime to phosphoric acid is abnormal, either too high or too low. In rickets one has to do with a less efficacious regulating mechanism, with a labile condition, which manifests itself in quite another way than in grass staggers[13].

We examined blood samples, taken from 19 grass stagger patients some weeks after recovery. The calcium-contents of the blood-sera were within the normal limits. This was also the case with the Mg.-contents.

On the other hand, the amounts of inorganic phosphoric acid varied rather much, *i.e.*, under the recovered animals were cows to be found with an amount that was higher than is generally the case with milk cows, and likewise there were those with a lower amount; while others again had a normal amount. We found contents of 2·8 to 7·9, while in normal milk cows between four and six were found. Of the 19 samples, seven had a P.-content between four and six mg. per cent.; three a content between six and seven, while in two it was above seven (respectively 7·5 and 7·8) and in seven lower than four.

It is possible that if a great many samples from normal

and non-susceptible cows were to be examined, it might turn out that the same high and low values were present in a few cases.

The urine of the animals that had recovered from grass staggers—nine samples taken from nine individual animals were examined—had Ca. P_2O_5 and Mg.-contents which varied between those of normal animals. The protein reactions and the acetone reactions also were always found in the negative. Thus, as far as the urines are concerned, no discrepancy was found.

Therefore, it is only the inorganic phosphoric acid of the blood serum that gives rise to the supposition that a somewhat unstable condition does exist in these animals. It is essential that these investigations be prolonged, from a theoretical point of view as well as with an eye to the practical bearing, and so that it may be possible to indicate animals with a predisposition for grass staggers, and thus the disease may be prevented by taking special precautions (feeding, etc.).

(To be continued.)

REFERENCES.

(1) My lecture given at the general meeting of the Dutch Veterinary Society on October 12th, 1929, was in the main the equivalent of *Tydschrift voor Diergeneeskunde* (the Dutch veterinary journal), vol. 55, No. 20-23 (1928).

(2) B. SJOLLEMA and L. SEEKLES, *ibid* September, 1929.

(3) In the paper here mentioned under (2) the separate analyses of each of the blood-sera that were examined have not been recorded. A tabulation will now be given of the figures concerning grass staggers.

(4) See, among others, *N.Z. Journal of Agriculture* of October 20th, 1928. DAYUS calls the disease, " Bobine parturient eclampsia," indicated by the farmers as " a new mysterious disease." It is supposed to be a " season " disease, associated with the feeding of the animals.

(5) For instance, of the M. triceps brachii and of the muscles in these surroundings.

(6) It must be excluded that the scattered manure itself might be the cause.

(7) Several of the symptoms that are manifested in grass staggers are also found in uræmia. In such cases intoxication must also be assumed.

(8) It is well to draw attention here to the very low amount of phosphoric acid in the blood of cattle which graze on soil in South Africa that is very poor in phosphoric acid, these animals often dying from styfziekte and lamziekte. This phosphoric acid content is not higher than is frequently the case in milk fever. Seeing that no milk fever symptoms are manifested on the South African pastures, the low amount of phosphoric acid is seemingly not the cause of the symptoms in milk fever.

(9) It is not impossible that the P-content modifies during the attacks of grass staggers. HAVARD and REAY (*J. Physiol*: 61, 35) found that in tetany the P-content first increased and then later on decreased.

(10) In normal cows, even when fed similarly, it varies greatly. In one animal *circa* 20, in another 200 or even more mg. Ca. p, L. urine.

(11) See High-urine-P-content in Sick Cattle, B. SJOLLEMA

(References continued at foot of col. 1, page 431)

The Veterinary Record.

MAY 17TH, 1930.

Our Ladies and Benevolence.

In our last issue we had the pleasure of recording both the splendid results achieved by the bridge- and whist-playing, and kindred activities of the ladies of the North of England Division on the occasion of the Annual Meeting of that body at Newcastle-upon-Tyne, in their effort to raise money for the Victoria Veterinary Benevolent Fund, and also the gratitude with which that effort and result were acknowledged at a subsequent meeting of the Council of the Fund.

Through all time the relief of penury and sickness has been recognised as the gracious and fitting special concern of the gentler sex, and we are convinced that hitherto insufficient recourse has been had, in endeavours to secure financial support for the profession's benevolent institutions, to that help which ladies associated with the profession have never failed to show themselves able and anxious to give when afforded the opportunity.

Moreover, by the organisation of bridge and whist drives, and similar events, in connection with Divisional meetings, a further important end would be served in securing for our local professional organisations the interest of members' wives and daughters in their well-being. They might well play a surprisingly efficient part, too, in the augmentation of attendances at meetings. With a pleasant afternoon's play and social intercourse in view by his lady, in place, or in supplementation of, the present inevitable and wearisome shopping expedition, no man would be allowed to miss a meeting, and the results of such innocent domestic pressure would rejoice the hearts of Divisional and Benevolent Fund Secretaries alike.

What the ladies of the North of England Division, and others on occasion in various parts of the country, have done to alleviate that great measure of distress to which the periodical reports of our benevolent societies bear painful witness, can be achieved on a scale which would remove for all time the dual reproach that our ladies are insufficiently linked with our professional associations and that, as a profession, we are unable to meet our obligations of benevolence.

Royal Army Veterinary Corps Point-to-Point Challenge Cup.

The annual race for the above was run, as in previous years, at the Hambledon Hunt Club Point-to-Point Steeplechases on April 19th last at Liss, Hants. There were nine entries and all started. Among the runners were two previous winners of this race, *viz.*, Major Bamford's Whizz Bang, who won in 1928 and 1929 and Major Townsend's Travel On, the winner in 1927.

Although the going was exceptionally heavy, the race was run at a very fast pace. For the first mile most of the runners kept close company; it was then that Whizz Bang took up the running, being closely followed by Travel On and Puckdawn. After about a mile-and-a-half had been traversed Whizz Bang fell. Travel On then led the field until just over the last fence, but in the run in he was challenged by Captain E. S. O'Kelly riding his own horse, Knight Breaker, which latter, in a desperate finish, got up in the last stride to beat Travel On, who was conceding the winner 10 lbs., and who was ridden by the owner's brother, Major C. H. S. Townsend, by a neck.

Major-General W. S. Anthony and Colonel S. H. Mosley were on the wagon to judge this event.

After the race, members of the Army Veterinary Corps hospitably entertained a large number of Officers and friends to tea in a marquee erected on the field and during the tea interval the Challenge Cup was presented to Capt. O'Kelly by Mrs. Anthony.

A Mystery at Lübeck.

"Out of 246 infants who were given the Calmette prophylactic tuberculosis treatment in Lübeck, eight have died and 23 are seriously ill," says *The Times*.

"The culture prepared by the French physician, Dr. Calmette, sub-director of the Pasteur Institute, from bovine tubercular bacilli, is given to infants between one and ten days old with their food. The purpose is similar to that of vaccination against smallpox; the absorption of the culture is supposed to render the children immune from tuberculosis for the rest of their lives.

"The Calmette treatment, it is claimed, has been successfully applied to some 400,000 children in a number of countries, including England, Austria, and Italy.

"The hospital authorities take the view that no accident or mistake could have occurred during the transit of the culture from Paris or its further development in Lübeck. In view, however, of the success of the treatment elsewhere, those in charge of the investigation are understood to have in mind the possibility of careless or incorrect handling or administration. The possibility of pollution is also contemplated."

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and *J. E. V. D.* Zande, J., or Metabolic Research 6, 159 (1924) issued end of 1926.

(12) In New Zealand it is thought that the disease is associated with the rapid growth of the grass, in a period which corresponds to our spring.

As the animals in New Zealand usually calve about this period, it may be assumed that the association with parturition is not essential. Seeing that the animals are in the pasture the whole year round, stall-feeding can play no rôle in New Zealand.

(13) One must keep in mind what was found on the sensibility of rachitic animals to a quantity of phosphoric acid.

Clinical and Case Reports.

"Calcium Gluconate"—its Value as a Therapeutic Agent in the Treatment of Various Diseases.

By W. Hepburn, F.R.C.V.S., Aberdeen.

Since November of last year I have been using calcium gluconate, as prepared by Messrs. Sandoz, as an adjunct to the treatment of several diseases, and the results have been on the whole so satisfactory that I thought that a few notes relative thereto might prove of interest to other general practitioners.

Milk Fever.

So far, I have treated 44 typical cases of milk fever with calcium gluconate only, and I have found one administration subcutaneously of 125 c.c. of Messrs. Sandoz's preparation to be sufficient in every case excepting five.

No. 1 received 250 c.c. subcutaneously at one administration, as the cow had been quite comatose for sometime previous to my arrival.

No. 2 was a heavy milker but past her prime. I administered 125 c.c. "calcium Sandoz" on my first visit and she recovered so far as to be able to sit up and turn herself. About 3 a.m. the following morning she had a relapse and I gave her another 125 c.c. and inflated the udder slightly; henceforth her recovery was uneventful.

No. 3 had been down all day and quite comatose, and as the case was a long distance away (19 miles), I administered 250 c.c. subcutaneously, and her recovery was uneventful.

Nos. 4 and 5 were cases in which the symptoms were well advanced, and these cases received one administration of 150 c.c., which quantity, I may state, is now being issued as the minimum dose by Messrs. Sandoz. Both cases made a rapid recovery and the owner, who has had extensive experience of milk fever and treats such cases personally, by inflation of the udder method, states that their recoveries were more rapid and better than by the inflation in that, the udder being undisturbed, the secretion of milk was practically unaffected.

All the cases showed almost immediate amelioration of the symptoms, and made uninterrupted recoveries.

I might mention that several of the cases were uncalved cows just at the drop, and the owners, being dealers, were not slow in appreciating the non-interference with the udder at this stage.

Atypical Milk Fever.

In addition to these typical milk fever cases I have had recently 19 cases of atypical milk fever, or so-called "Staggers," and with the exception of three, all recovered, some of which, being sometime calved and practically fat, were sent to the fat sale and made satisfactory prices; the remainder are doing well and gradually returning to their normal milk yield.

In regard to the three, No. 1 received several injections of 125 c.c., including inflation of the udder, and usual treatment, but no relief was given and she died. No. 2 was given 250 c.c. and recovered and apparently was

going on all right for two days when on the following morning she had a return of the brain symptoms and died about an hour afterwards. No. 3 received 250 c.c. and recovered in so far as to be up and all brain symptoms had disappeared, but as she was in pretty good condition and a long time calved, the owner decided to send her to the slaughter-house.

I am emphatically of the opinion that the calcium treatment of milk fever is a decided and valuable advance on the inflation method of treatment, for three reasons :—

1. It is equally successful.

2. The non-interference with the udder, which rules out any blame that can be ascribed to the inflation if mammitis should occur a few days later, and the lessening of the milk supply which occasionally is alleged to occur.

3. It prevents the layman from treating the case himself. Relative to this rather important point to practitioners, I am pleased to state that, owing to arrangements made with Messrs. Sandoz, through the kindly medium of Professor J. Russell Greig, they will only supply their preparation (which, incidentally, is the only one tolerated when injected subcutaneously or intramuscularly) to the veterinary profession at home and abroad.

Another point of practical importance to clients, if dealers, is that the cow is in a fit state to be sold next day, the udder being in its normal state. I have had several cases in the above category, and all have done well.

Parturient Red Water.

This malady is well known and dreaded by both stock owners and veterinarians in the North of Scotland, as it accounts for many victims during all the seasons of the year. It is most fatal when it occurs a few days after calving up to 14 days thereafter, and also in those cases not so recently calved but in which the patient has practically ceased feeding before the ailment has been discovered by the owner, and skilled assistance called in.

Up to date I have had nine cases in which I have used calcium gluconate as an adjunct to my former method of treatment. All these cases were in cows ranging from 7-12 days calved, and in which the symptoms were severe. In one case gangrene of the tail and brisket took place, involving the loss of part of the tail and extensive sloughing in both sides of the brisket; nevertheless, the animal made a good recovery and is milking well.

All of these cases recovered, with one exception. In this latter case the urine was " black," which cleared in seven days, but was followed by most obstinate constipation and straining which refused to yield to treatment.

I may say that, so far, I have not relied on the calcium gluconate alone, but I have used it in conjunction with the treatment which I have used for many years, and found to be the most successful, *viz.*, calcium and ferric-chlorides internally.

I am perfectly certain that at least two of the animals would have died had the calcium not been administered subcutaneously. Three to six doses of 125 c.c. were sufficient in each case, excepting the one that died. In future, I intend using larger doses, as I think even better results might be obtained.

I have held the opinion for long that this disease was one that ought to be incorporated in the class of " Deficiency Diseases," and it would now appear that, in certain cases at least, the deficiency is one of calcium, but research is needed in this respect.

Parturient Eclampsia in a Sow.

One other case, I think, is worthy of note, this being a sow which had farrowed during the early morning, and at night I was sent for as she had become quite frenzied and would have killed all the youngsters if they had not been removed. On arrival I found her in a very excited condition and staggering about in the sty; in fact, the symptoms she showed were almost typical of milk fever in the cow. I diagnosed the attack as one of parturient eclampsia and decided to try the effect of calcium gluconate. I administered subcutaneously 80 c.c. of " calcium Sandoz " and in certainly not more than 30 minutes she had ceased her wanderings and lay down and remained quiet all night. The following day, after receiving some laxative medicine, the piglings were returned to her care and she gave no further trouble. About a week afterwards I had to make a return visit and treat a rather bad abscess which had developed at the site of the injection; otherwise, her progress was all that could be desired.

In view of the foregoing results in various diseases, and I am hopeful that the list is not ended, it would seem that the advent of calcium gluconate marks an epoch in the advancement of therapeutics as applied to veterinary science, and congratulations are due to those concerned in the researches connected with its elucidation.

Royal Sanitary Institute Congress.

The largest gathering in the cause of public health will take place this year in the last week of June at Margate, in the form of the Annual Congress of the Royal Sanitary Institute, under the Presidentship of the Right Hon. Lord Cornwallis, Chairman of the Kent County Council.

Of particular interest to the veterinary profession is the fact that Dr. O. Charnock Bradley, D.Sc., M.R.C.V.S., Principal of the Royal (Dick) Veterinary College, Edinburgh, will deliver the lecture to the Congress on "Diseases of Domestic Animals from the Human Angle," on Tuesday, June 24th.

The programme of Section F. (Veterinary Hygiene) was detailed in the *Record* of March 29th by Mr. J. R. Hayhurst, its Recording Secretary. The President of the Section is Major-General Sir John Moore.

It is expected that, including delegates, Members of the Institute, Officers of the Congress, visitors, and others, the total attendance at the meeting will be about 1,500. Among the Foreign and Dominion Governments, etc., to be represented are: Commonwealth of Australia, South Australia, New South Wales, Victoria, Punjab Government, Bombay Municipality, Karachi Municipality, United Provinces (India), Capetown, Port Elizabeth, Pretoria, Lagos, Ontario, Nova Scotia, Singapore, Egypt, Denmark, Greece, Luxembourg, Mexico, Persia, Poland, and Bordeaux.

A special feature this year is the visit of 200 representatives of the American Public Health Association.

Yorkshire's Need for a Research Station.

At the last meeting of the Craven Tenant Farmers' Association, it was decided to write welcoming the formation of the Diseases of Animals Committee by the Yorkshire Agricultural Society, and also to urge upon the Leeds University authorities the urgent necessity of applying for a Government grant for a research station to serve the three Ridings.

Divisional Reports.

Central Division, N.V.M.A.

Meeting at the Royal Veterinary College.

First-Fruits of the Film Library.

Although its buildings are admittedly "a national disgrace," teaching activities at the Royal Veterinary College bear witness to the progressive spirit of those who have to make the best of them pending their reconstruction, and nothing speaks more eloquently of the determination of the Principal and staff to be up-to-date in their methods of tuition than the very satisfactory start which has been made in the fascinating and valuable pursuit of establishing a film library.

The Fellows of the Central Division were privileged, at a meeting held at the College on April 10th, to witness the first-fruits of this commendable pioneer work, and were enabled to appreciate from what they saw its potential utility in the practice and teaching of veterinary medicine and surgery. A short paper on the subject by Principal Hobday was followed by a series of films illustrating anæsthesia, operative procedure, paralysis and lameness respectively, Professor McCunn being responsible for the last-mentioned and opening the discussion.

The chair was occupied by the President (Professor James Macqueen) and there were also present Captain L. S. Balls, Mr. A. J. Beeson, Mr. W. Brown, Captain R. Bryden, Mr. H. E. Bywater, Major T. Dalling, Messrs. W. S. Gordon, S. Gourley, H. Gray, Principal F. T. G. Hobday, Messrs. C. W. Howard, Herbert King, N. S. King, H. D. Jones, J. H. Mason, Professor J. McCunn, Captain F. W. Medlock, Major-General Sir John Moore, Messrs. A. B. Orr, W. Perryman, J. W. Pritchard, Lieut.-Col. G. Rees-Mogg, Mr. C. Roberts, Miss K. W. Shedlock, Lieut.-Col. P. W. Dayer-Smith, Major J. J. Soutar, Mr. F. H. Stainton, Captain R. J. Stow, Major F. J. Taylor, Mr. W. N. Thompson, Captain W. K. Townson, Captain S. Villar, Messrs. F. W. Willett, J. Willett, D. E. Wilkinson, and Captain J. F. Macdonald, Hon. Secretary.

Visitors.—Sir William Willcox, Dr. Irwin Moore, Miss D. E. May, Miss Strachan, and Messrs. J. F. M. Bennett, R. E. C. Bullen, E. J. Edwards, H. Eley, C. S. Haselden, R. L. Higgins, J. W. H. Holmes, D. Johnston, R. Machin, W. J. Perryman, F. Proud, G. Raphail and A. Sillars.

The *minutes* of the last two meetings of the Division, which had been published in the *Record*, were taken as read and were confirmed and signed.

Correspondence was limited to the receipt of apologies for absence from Lieut.-Col. E. Argyle and Mr. E. Lionel Stroud.

Elections to Fellowship.—The following gentlemen were unanimously elected to Fellowship of the Division:—Mr. R. E. C. Bullen (Godalming), Mr. G. N. Gould, junr. (Southampton), Mr. S. Gourley (Brighton), Major F. S. Probyn (Harrow-on-the-Hill), and Mr. A. Sillars (Sutton).

There were no morbid specimens, and the President now extended a warm welcome to Sir William Willcox, the distinguished Home Office Pathologist.

The President called upon the Principal of the College to read his paper, which was as follows:—

The Value of the Cinema for Veterinary Educational Purposes.

By Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E., Principal of the Royal Veterinary College.

The world progresses and veterinary science must advance too, as progress in the prevention and control of animal diseases and animal ailments is of as much vital importance to the welfare of the community as is any other branch of national life. In this respect the cinema film has placed one more useful adjunct in our hands, whereby not only the veterinary student, but also the practitioner and the laboratory worker, can ease and simplify the desire for understanding knowledge which the present-day strenuous life involves.

The value of the cinema for educational purposes is very great indeed, and it is certain to be adopted in every veterinary teaching college as an essential instrument. With this, and an epidiascope, a lecturer has at hand the most complete facilities for making his lectures interesting and for stamping even the dullest brains of his class with impressions which are not only lasting but clear. These impressions are especially valuable to the student, because they give each individual the opportunity of thinking for himself and describing in his own words the pictures delineated on the screen.

By possessing a cinema (and we own one through the generosity of an old student, Captain Louis Sewell) the teacher has an enormous advantage in the assistance given to plan out his syllabus of work, as, for example, in surgery the actual operation can be shown at the time when the subject is that of the lecture.

Again, take such a subject as Physiology, where a certain amount of animal experimentation is sometimes considered necessary: there will be no need for fresh animals to be provided time after time for repetition of the same class teaching experiments, as a cinema production of the first experiment will show it to every member of the class at once.

In every subject of the College curriculum the cinema film will find valuable usage—in surgery, medicine, anæsthetic administration, obstetrics, for clinical demonstrations, especially in such subjects as lameness and the practical details of operations, and in numbers of ways not yet exploited. In fact, it may not be an idle prophecy to say that the day is not far distant when the final settlement over a disputed case of stringhalt or shivering (or even slight lameness or defect of action) may be settled at a Veterinary College (or even at a private practitioner's establishment—for the cost of the apparatus is not even now prohibitive) by the production of a slow-motion cinema picture in front of a body of experts selected by the disputants to decide the question as to whether or not a valuable animal is suffering from the ailment or defect alleged. A film can be repeated again and again at will—slow motion applied, or the machine stopped at any point where required to settle a doubt

or a dispute—with everybody sitting in arm chairs, smoking cigars and deciding in comfort.

Not only from the technical educational point of view is the cinema valuable to the veterinary profession, but also from the sidelight of helping to make veterinary history. After one of the recent gales the gable over the main archway and the glass roof near the operating bed became dangerously unsafe, and the act of demolition is now the subject of a permanent film for future generations of students and practitioners to see what actually happened in 1929 to the Mother College of all the English-speaking Veterinary Colleges of the world.

The students, too, have recognised its value from a sporting aspect, and at their request, the Intercollegiate Rugby Team contest between the Edinburgh and London Veterinary Schools was filmed and will be preserved as an interesting record of an interesting event.

We have now, by the help of Mr. Done, the Managing Director of the Kodak Company, and his colleagues Messrs. Buxton and Robertson (the latter the son of an esteemed member of the profession) started a Film Library, and we are prepared to arrange exchanges with other Colleges at home and abroad. Messrs. Kodak, too, who have a very well-known Medical Film Library, have added a Veterinary Section from which films can be obtained for instructional purposes; so that you will, I think, agree, after seeing the films which will be shown to you to-night, that the matter is now well past the experimental stage.

Without further preamble I propose now to show you a selection of films, from which you will be able to judge for yourselves the educational value of this method in the teaching of Veterinary Science. When I have finished I shall ask my colleague, Professor McCunn, who has taken the greatest interest in the scheme, to open the discussion by showing you a lameness film and then giving you his opinion as to what has struck him in regard to this apparatus as an aid to veterinary education.

The first film represents the administration of chloroform as an anæthetic for the dog and the horse respectively—with a horse patient having radium needles applied for the removal of a tumour of the sclerotic coat of the eyeball. I will then show you the ventricle-stripping operation for roaring; the removal of an enlarged testicle from the abdomen of a cryptorchid; then a paralysed dog, and finally, when Professor McCunn open the discussion, a film of various lame patients—both horses and dogs.

The value of films as a means of demonstrating detailed operative technique was an outstanding feature of the pictures which were now shown, and the position of those witnessing them compared exceedingly favourably with that of practitioners struggling to get an occasional glimpse, even of operator or subject, at the average veterinary meeting operative demonstration. In the same connection, continuity of vision is an important factor, while the possibilities of cutting out and speeding—or slowing—up when required constitute very real comparative advantages. Moreover, the work can be relied upon to be that of a master.

The series concluded with a physiological film from the Kodak Medical Library, illustrating peristalsis and the forming and dispersion of an intussusception.

Discussion.

Professor J. McCunn, M.R.C.V.S., M.R.C.S., L.R.C.P., said that he must start by thanking Principal Hobday for the compliment the latter had paid him in asking him to open that discussion. When the Secretary of any society could get Principal Hobday to read a paper, or do something like that which they had heard and seen that evening, he was always sure of a good attendance and of getting something original, if not unique. (Applause).

Principal Hobday had given him some credit, but he desired to say that little of the credit attaching to that process of film-producing belonged to him, because it was Principal Hobday who initiated it, and had induced friends to give them the apparatus, etc. A lot of credit, too, was due to Mr. Southern who worked the machine and had rapidly mastered the technique. (Hear, hear.)

Nowadays they had to move with the times, and the pictures were meant primarily for the instruction of students, but they would all agree that they were of great benefit also to practitioners. There was one respect in which the matter especially appealed to him. Each one of them there that evening had been looking at the picture as though he were the only one doing so. They had a clear uninterrupted view. That was an entirely different thing from watching surgeons at the bed, for there everyone interested was pushing round and, in the end, no-one saw anything. He left the College knowing in the text-book way how to do a rig operation, but frightened to death to do it. (Laughter.) But most people, if they saw that film once or twice, would have enough confidence to have a go at it.

They had, nowadays, to keep the student up to the mark: he would not be taught in the old-fashioned rule-of-thumb manner; he wanted something new. His eyes were accustomed to taking things in—his sight was probably his acutest sense. Where a teacher utilised films for showing him what certain things really were like and how certain other things really should be done, he was sure they were giving him a better insight into his work, especially in surgery, than had been the case in the old way. Moreover, in surgery one wanted to learn from the best surgeons, though it was a peculiar fact that he, having studied both human and veterinary surgery, had learned most of it from the "dud" surgeons: he could not learn it from the tip-top man, for the latter worked far too quickly and had too great a crowd around him. Now, by those pictures, they could learn, as they should do, from good surgeons, because a hundred men could look on without getting in one another's way.

Pictures were useful in many ways, even in anatomy. From their study of pictures, or even of diagrams, he found that students knew more about that subject. When he asked them questions in anything he did not get the rule-of-thumb repetition he used to do. If one pointed to any spot on a horse, five out of ten of them could now tell one what structures lay underneath that particular area. He could not do that when he was a student. The value of pictures was recognised a good many years ago, by Rolfe Cox; and Professor Macqueen kindly gave him a book which was not written, but drawn, by Rolfe Cox who, as he went about his ordinary business as a veterinary surgeon, attempted and succeeded in drawing pictures of animals suffering from various diseases.

He had asked Mr. Southern to take from that book some of the pictures and show them on the epidiascope. Those pictures were a revelation; one could see and recognise the condition at a glance, so accurately did they portray the clinical picture to a man who was familiar with the disease. Their educational value in the hands of the teacher was very great.

One picture was of choking in the horse; one illustrated twist, another laminitis and another tetanus. They made each condition perfectly recognisable, and yet how much better it would be if they had films depicting choke, twist, laminitis and tetanus.

Another point which came to his mind while looking at the films they had seen was this. He feared that at the present time they had lost the art of descripion. There

was no doubt that much could be learned from reading a modern clinical article; but let them turn up Blaine or Youatt and they would find that these writers had so mastered the art of description that they could show you the animal as if it were before your eyes. Modern writers could not do that.

His part of the film programme consisted of the lameness cases. They had horses with ringbone; they would notice that they were lame when they put the affected foot down, not when they either flexed or extended it. They had one with a strain of the check ligament during diminished flexion and extension of the knee. Another had laminitis: they would see the typical laminitic gait, and how the animal went sound an hour afterwards, when shod with a modified Blenkinsop shoe. They would see a horse with arthritis of the hip and would notice the peculiar bobbing gait, short step, and the circumduction of the limb as he brought it forward. They would be shown a horse lame both fore from ringbone, and would see him after he had been unnerved—median and external plantar; how his step had lengthened and his gait become more free. There was a picture depicting a case of lumbar paralysis in a dog—a post-distemper case—and they would notice the peculiar inco-ordination, progression being by means of alternate side to side jumps of the hind limbs. Another was a dog with a fractured toe; they would observe that he was lame when he put his foot down: he extended and flexed the leg well. Another dog had a fractured wrist, and they would note that, although he went fairly freely after some days of massage, he had still got a great want of flexion in that wrist.

After seeing Principal Hobday perform his operation, he thought they must all be sorry that they had not got cinematograph pictures of such surgeons of the past as Wortley Axe, or of Professor Macqueen doing his abdominal operations on the horse. (Hear, hear.)

The films to which Professor McCunn had referred were now shown, and at their conclusion the subject was thrown open for general discussion.

Lieut.-Col. Rees-Mogg said that they would all desire to express their thanks to Principal Hobday and Professor McCunn for their most illuminating demonstrations. (Applause.)

He was sure that students nowadays had many more advantages than those of 25 or 30 years ago.

Doubtless it was his own fault, but he was afraid he did not follow clearly the picture showing the radium treatment of the growth in the orbit of the horse. He could not quite make out where the radium needles were inserted. The other pictures were fool proof (laughter) and he would only add that there was nothing like seeing a thing to enable one to understand about it and to learn it.

Professor McCunn replied that the subject of the operation was originally his case, and probably he could explain it more clearly because he was there all the time.

It was a growth on the conjunctiva at the corneal-sclerotic junction. A small piece of the growth was excised for section, as it was deemed to be of a malignant nature. The owner was prepared to go to any expense to save the horse's eye; therefore, when he (Professor McCunn) heard of the radium needle treatment from his old colleagues at the London Hospital, he got one of them to come up and see it. He agreed that it was of a malignant nature and thought that most probably the radium needle would be a good thing to use. Altogether four pathologists and ophthalmic surgeons turned up to see this case, and their combined opinion was that if radium needles were used the growth would disappear. Mr. Neame volunteered to operate, and what he did was to take another piece for section, leaving the bulk of the growth in, and to make small pockets with the end of the knife underneath the cornea and dipping into the sclerotic coat. Into these pockets he put three radium needles, in different directions. Each needle had a little piece of thread attached to it, and the three ends were tied together. He also picked up two folds of the conjunctiva and stitched them over the growth. The needles were left, in order better to imprison the needles, for 48 hours; when removed, there was a pronounced hyperæmia of the eye, in the conjunctiva and especially round the growth. The eye watered a little, but the hyperæmia gradually disappeared and so did the growth, there being only a fibrous scar left. It took about a month before the growth completely disappeared. That was five months ago and there had been no recurrence. (Applause.)

Radium needles were reasonably cheap, 3s., 4s., each. Each needle was shaped like a bullet or large gramophone needle. They contained radium gas and each bore a thread for fixation purposes.

Major F. J. Taylor observed that a picture of particular interest to him was that of the lame greyhound so perfectly reproduced on the screen.

He recently had a well-known racing greyhound named "Lucky Laughter" brought to him from Wembley for operation on an old-standing fracture of the second phalanx (near fore foot) which was causing intense lameness. The owner's wish was to have the whole digit removed, but it was found during operation more advisable to remove the claw and first two digital bones, leaving the pad intact, and thus keeping the adjoining digits in proper position and avoiding friction during high speed movements. This, said Major Taylor, proved highly successful, and the dog had won many races since and went quite sound. He asked if this method met with the approval of the surgical teachers at the College.

Mr. Perryman said that Major Hobday always had been a pioneer, and this latest example of his enterprise and enthusiasm was most instructive to them and encouraging for the College. (Applause.) He was inclined, however, to question the claim that in future arm-chair diagnosis before the film would lead to a greater facility of decision; for instance, Professor McCunn had shown them what he had described as a "shiverer," but he (Mr. Perryman) would like to differ. That film showed what was known in some horse-owning circles as a "bobby-backed" horse. There was a great distinction. What they saw there was, to his mind, a case of lumbar trouble. In the case of shiverers the leg came up with a spasmodic motion, but in the case they saw there the horse rolled from side to side.

He fully agreed, however, that the cinema, as shown there that night, was most instructive; he wished they could have seen yet more films, and he was certain that it provided for students one of the best forms of instruction they could have. That very week he had a case in which he wished he had a little show of his own. He thought he had to deal with a fracture of the first rib, but time proved that it was only a case of radial paralysis. If that had been produced on the screen it would have been one of the most instructive things the student could have seen.

He appreciated very much what Principal Hobday and Professor McCunn had done, and he thought they were deserving of their most cordial thanks. (Applause.)

Mr. J. Willett said that he also would like to add his praise and thanks to Principal Hobday and Professor McCunn for what they had shown them that night. He agreed with the last speaker that they had not been shown a typical case of shivering, and he was surprised when Professor McCunn described it as such. He should like to know what treatment Principal Hobday adopted to get such a fine result in the case of paralysis in the dog.

Mr. Gray congratulated Principal Hobday and Professor McCunn on "at last taking up this branch of veterinary teaching." Professor McCunn had mentioned the accurate pictures of the past. If they went back to Youatt they would see in his book of nearly a century ago a fine illustration of tetanus. If they would refer to Mayhew they will find that he gave good if rough illustrations of the various attitudes of the horse and dog in lameness, choking and disease before John Rolfe Cox entered the profession. The use of the cinematograph to illustrate lameness was introduced into the New Edinburgh Veterinary College by the late Professor Ewing Williams some 25 years or so ago, and the machine was used mainly in instructing the students in different forms of lameness.

That was where its great field would lie—to show students the attitudes of the animals and the ways they carried their limbs.

As for the films depicting peristalsis in the rabbit, he thought that might be applied in some of the bowel diseases in the various species of animals. But, in the horse, too much attention was paid to the effect—the lameness itself—and too little to the cause, which was what they wanted to ascertain. That applied to the diseases of other animals. Ninety-five per cent. of the cases of paralysis in the dog recovered without any treatment, but they must have patience. They rushed to give strychnine and such-like things, which often made a case worse or incurable, especially if used in the earlier stage. He was a great believer in *vis medicatrix naturæ*.

What they wanted to do was to give the student more object lessons, from which he would learn more (by seeing) than he would from reading.

Capt. S. Villar observed that, although they must all have experienced a feeling of depression when entering the College and noting its dilapidated state, that feeling must have departed completely as the result of the evidence they had had that evening that the instruction given therein was so full of vitality and value. (Applause.) He must congratulate the Principal on his energy, and his lieutenants on their adoption of all the modern methods in the training of their students. (Applause.)

It occurred to him that it would be a very good idea to use that film for propaganda, to depict the various phases of veterinary work. There was a growing need for research workers amongst the veterinary profession, and he thought if it were shown on the film what a desirable and interesting life scientific work provided, students would more readily take it up.

Major-General Sir John Moore expressed his thanks to the demonstrators and proceeded to say that there was no doubt that that idea of illustrating veterinary conditions, operations and lamenesses was a step in the right direction, but it should go hand in hand with the manual examination and the clinical experience which they were taught.

He was sorry that his friend Dr. Irwin Moore, who was a laryngologist of the first water, was not present to see the film representing the operation on the larynx. He was sure that he would have been very interested indeed, for he (Dr. Moore) had collaborated with Principal Hobday a good deal on work on the larynx, and with mutual benefit.

The President said that before calling upon Principal Hobday and Professor McCunn to reply to the remarks that had been made, he would like to say that the exhibition, or entertainment, had been extremely interesting. He thought that the progress that had been made by showing the procedure on the screen was decidedly commendable, but apparently a good many improvements were necessary before that method could be adopted in place of ordinary teaching.

Professor McCunn had dropped the remark that he thought anatomy could be taught better by pictures than by actual specimens or acquaintance with the dead subjects.

He did not agree with that. When the parts of the horse were available it was better to make one's acquaintance with the actual specimen than with any form of picture, for that was the only way in which one could acquire that familiarity which was necessary to successful practice.

We regard to Professor McCunn's pictures of lamenesses, he thought they were very elementary. Before one could utilise the screen as a method of diagnosis of lameness in the horse, one would have to be sure of one's initial steps, and one of those was the application of the name or title to the condition of the lame horse. (Laughter.) Professor McCunn had shown them one or two horses which he said were lame from ringbone. How did he know that? One would require to have verification before the label was applied if one was to judge by the action of any of the cases (except the laminitic case) shown, as definitely pointing to the disease which was mentioned as descriptive of the actual case.

He agreed with Mr. Perryman and Mr. Willett that the example of shivering was really abominable. (Laughter.) He should be very sorry indeed for a student to think that that picture exhibited shivering. He noticed that it was described as an early case: he should think it was an exceedingly early one—the night before. (Laughter.)

In the veterinary profession one was always learning, and he learned that night that there was a condition in the horse known as "bobby back." He had never heard of nor seen a case of the kind, and he was entirely at sea as to what was known as "bobby back."

It would be a great advantage to the student if a few cases could be filmed and examined during life and the diagnosis verified after death, but otherwise he saw no prospect of utility in offering those filmed cases to the profession as an aid to the diagnosis of lamenesses. Apart from that, he thought both gentlemen were to be congratulated upon their enthusiasm in trying to develop a better method of teaching and he thought that, on that account alone, notwithstanding the elementary nature of some of the things they had shown that night, they ought to be heartily thanked for what they had done for them. (Applause.)

Mr. J. Willett observed that "bobby back" was a term which, though not to be found in any text-book, was well-known amongst a low type of horse dealer.

The Replies.

Principal Hobday said that it was very nice to have had experience of one thing, at any rate, and that was a word of praise from Professor Macqueen. (Laughter.) He had criticised them very pleasantly, and that was much appreciated. He had, moreover, given them a hint, and Professor McCunn and himself had both decided to take that hint: those were entirely pioneer films; they had 20 or 30 now, but they were for the most part taken in amateur fashion and before they exhibited any more they would refrain from attaching any labels to them until the animals shown had been made the subject of *post-mortem* examination. (Laughter.)

One or two points of great interest had come up in discussion. Mention had been made of the pictures of their old observers Blaine and Ewart and Rolfe Cox, who gave them those wonderful pictures without the spoon-feeding enjoyed by the student of to-day. They were the work of absolutely trained observers, men who stood out in front of their fellows by reason of their powers of keen observation.

Major Taylor and Mr. Stainton had mentioned the subject of operating on the greyhound's foot and removing the pad. It was a sound principle that surgery should be as conservative as possible in the removal of tissue, and that where it was possible to leave the pad it should be done, especially with such dogs as the greyhound, in which speed was essential.

As regarded the treatment of cases of paralysis, that particular case was treated with bromides at first and afterwards with arsenic; then with massage across the loins and finally with electricity. Their proportion of successes with that treatment had been very satisfactory.

The suggestion had been made that the use of the camera should be made available for the mutual benefit of practitioners and the College students. That was a thing that they were quite prepared to do; in fact, they were anxious to do it.

Wherever they would tell him that there was an interesting case, he would endeavour to make arrangements to send Mr. Southern to take cinema photographs and afterwards have them made into a permanent film for instructional purposes at all the Colleges and at Veterinary Society Meetings. The London College had now a nucleus of original films for which arrangements had already been made whereby the numbers and subjects depicted would shortly be increased by mutual exchanges and original contributions.

Professor McCunn, in his reply, said that he liked criticism and he liked to criticise, because to him criticism was the spice of life, and there was no one whom he liked to criticise or to be criticised by, better than Professor Macqueen.

The latter had said that he dropped the suggestion that anatomy could be taught more efficaciously by the use of pictures than by actual specimens or acquaintance with the dead subject. He did not know where he dropped it, or where Professor Macqueen picked it up; his suggestion was that anatomy could be taught better by pictures than by learning things parrot-fashion. There was no doubt that the fresh specimen was the best thing, but if a man could only repeat a description of that specimen without being able to recognise it, he (Professor McCunn) did not think he knew much about anatomy,

As regarded the lameness, Professor Macqueen doubted his diagnosis of ringbone in some cases. [Professor Macqueen: " I only asked you how you knew." (Laughter)] In all those cases he doubted it himself (laughter) and he called in Professor Macqueen in two of them and he said " It is ringbone." (Loud laughter.)

Professor Macqueen had learned that night of a condition, knowledge of which, he could assure him and Mr. Willett, was not only common to the low types of horse dealers—it was known to him (the speaker) also as " bobby back," and he had always associated it with shivering. To his mind, the two conditions were very similar, the only difference being one of degree. At the same time, although he knew the clinical manifestations of both, he did not know the cause of either. However, he thought that both were proved clinical entities.

Principal Hobday had answered Professor Macqueen as far as the desirability of verifying by *post-mortem* was concerned: they endeavoured to do so in all cases where it was possible.

The process of making films of veterinary subjects was as yet only in its elementary stage, and their endeavours, as far as lamenesses were concerned, were mainly directed to the fixation of types. They might have completely to alter their lameness films, because in all cases but one their diagnosis was simply based on clinical evidence, and they all knew how erroneous that might be.

Another point which had been brought up concerned the operation on the greyhound's foot and he thought that Principal Hobday's answer was the correct one: that surgery should not be mutilation, but should conserve as much as possible. In the greyhound it was particularly necessary to conserve, because he knew of a number of well-known dogs which had had lost seconds of their time because of the removal of a toe. If it were necessary to remove it he should strongly advise saving the pad, as that diminished the resultant deformity and preserved the dog's speed.

Mr. Gray had had a few words to say as regarded the wonderful pictures of the masters of observation of the past.

He (Professor McCunn) had merely instanced them as typifying the benefit one could derive from pictures and also to put it on record that they were there for all to see. It was a great tribute to those men that they, being veterinary surgeons earning their living in practice, should possess such an overwhelming interest in their work that they should sit down by their subjects and spend hours in producing those wonderful pictures of cases, in order to pass them on to their fellows and successors for their clinical benefit. (Applause.)

The meeting concluded with the passing of hearty votes of thanks to Principal Hobday and Professor McCunn for their demonstrations, and to Mr. Southern, the operator of the machine.

Prior to the meeting, a number of Fellows took advantage of the invitation extended to them by the Principal and staff to look round the College, and to take tea in the Professors' Common Room.

J. F. Macdonald, *Hon. Secretary.*

The driver of a passenger train in Devonshire noticed a ewe engulfed in a bog with a lamb standing by crying piteously. He stopped the train and rescued it.

Mid-West and South Wales Division, N.V.M.A.

Mr. Oscar Stinson at Bath.

Demonstrations on the Bovine, and Contagious Abortion Discussion.

Highly successful meetings have been the rule rather than the exception throughout the long history of this important Division, therefore an attendance threatening the "record" at the gathering held at Bath on Friday, April 11th, 1930, indicated that once again the Council had scored a " bull " in their choice of programme. Not that there was the least element of doubt once that choice had been made, for it has long been proved that the provision of a series of demonstrations is an assured draw, while in this case the identity of the demonstrator made assurance doubly sure. The event, too, revealed that in going all the way to Westmorland for their man the Council had not erred in acting on the courage of their conviction that a visit from Mr. Stinson would be particularly acceptable to a Division in which cattle practice predominates, for he carried the proceedings lightly and efficiently on his shoulders.

The members gathered early in the afternoon at the Bath Cattle Market (made available for the purpose of the clinical demonstrations by the kind permission of Alderman T. Stone, Chairman of the Markets Committee), where for the succeeding two hours they followed, with the keenest interest and appreciation, the masterly work of Mr. Stinson.

Crucial Incision Operation.

Three teats were operated upon for constriction of the sphincter. Mr. Stinson remarked that he now bandaged the teats after the operation until healing was complete. The dressing applied after each milking to the bandage over the teat-end was Ol. terebinth 1, Ol. olivæ 3.

It was observed that now the instrument is secured to the opposite teat by a piece of thin string and a rubber band—in case of its being dislodged during manipulation, thus preventing contamination from contact with the ground. Otherwise, the detail was as previously recorded. Ethyl chloride was used as a local anæsthetic, although it was stated by Mr. Stinson that it was not essential.

Spinal Anæsthesia in the Cow.

Spinal anæsthesia was demonstrated. The animal showed no inconvenience at the time of injection and was recumbent in 14 minutes. The method appeared simple, and the exhibition of *post-mortem* specimens relating to the anatomy of the region operated upon assisted the demonstrator greatly when explaining. A description in detail of the procedure, etc. from the pen of Mr. Stinson was published in the issue of the *Veterinary Record* of April 19th, 1930.

This section of the proceedings concluded with a demonstration, by Mr. J. R. Barker, of Hereford, of passing the stomach tube in the horse by the nasal route. The tube was passed *via* the right nostril and, although it was of somewhat large bore for the size of animal, without distress, resistance, or epistaxis, Mr. Barker meanwhile

detailing points to be noted in the procedure and the indications for its adoption.

The Meeting.

The Members then repaired to the Red House Restaurant, where, following consideration of routine business, Mr. Stinson opened a discussion on "The Treatment of Contagious Abortion in an affected herd."

The President (Mr. W. R. Watson) occupied the Chair and there were also present Mr. A. S. Adams, Capt. G. Atkinson, Capt. W. A. Austin, Capt. J. R. Barker, Messrs. J. R. Baxter, E. C. Bovett, W. T. D. Broad, M. L. Dartnell, B. Gale, Capt. A. F. Good, Mr. R. W. Hall, Major G. E. Henson, Capt. J. R. Hewer, Capt. J. Howard-Jones, Messrs. T. J. Margarson, C. Masson, R. Moore, Capt. S. H. Pettifer, Capt. J. C. S. Powell, Mr. W. D. Rees, Capt. J. Richardson, Messrs. A. E. Roberts, B. Sayer, E. Sayer, Major E. E. Seldon, Major R. Tindle, Messrs. F. Tonar, G. V. Tyerman, W. Webster, H. C. Wilkins, M. E. Williams, T. B. Yarrow and C. E. Perry (Hon. Secretary).

Visitors.—Mr. Oscar Stinson, Miss V. A. Amos, Messrs. H. W. Steele-Bodger, A. M. Gratan, M. R. Malagan, J. C. Weston and C. R. Wood.

The minutes of the previous meeting of the Division, which had been published in the *Record*, were taken as read and were confirmed and signed.

Correspondence.—(1) From Messrs. J. W. Hall Masheter and W. Scott, apologising for their inability to attend the meeting.

(2) From the Secretary of the Royal Sanitary Institute, inviting the Division to appoint representatives to the forthcoming Congress of the Institute, to be held at Margate. The Council's recommendation that Mr. J. C. Coleman, of Swindon, should represent the Division was approved.

R.C.V.S. Council Election.—The Hon. Secretary said that, as the members were aware, that Division was running two candidates for the next election to Council R.C.V.S., *viz.*, Messrs. Coleman and Rees. They, as an association, decided to do all they could to get those gentlemen returned, because they were of opinion that the country practitioner was not sufficiently represented on the Council of the governing body of the profession; he was therefore instructed by the Council of the Division to write to the adjacent divisions seeking their support for these candidates. He had written to the Western Counties Division and had attended its last meeting on their behalf, and that division had promised their full support. He had also written to the Midland Counties Division and had received from the Hon. Secretary a reply stating that he would be pleased to lay the matter before the May meeting of that division.

The Treatment of Contagious Abortion in an Affected Herd.

The President said that he had much pleasure in calling upon Mr. Stinson to open a discussion on the above subject.

Mr. Oscar Stinson (Appleby), who was received with applause, said that when he was asked to attend that meeting it was suggested that he might read a paper on some popular topic. He read the *Record* as he ought to read the Bible (laughter) and as a consequence he felt that the subject of contagious abortion had not had its due measure of discussion. Lately, veterinary surgeons who had been speaking on the subject of contagious abortion seemed almost invariably to take up a position against the use of the live vaccine. He was there that afternoon to speak on behalf of the use of the live vaccine, for he felt that the matter required very serious discussion.

He would like to just mention that the Bacillus of Bang was only pathogenic when an animal was pregnant or was secreting milk. Knowledge of those two facts was important.

From the results he had got, he could not understand why veterinary surgeons did not use the live vaccine. It had been suggested that the *Brucella abortus* caused undulant fever in human beings, but although he admitted that that was possible, he was not satisfied that it did so. Even if that were granted, however, they must remember that if they were to lessen the incidence of the disease in animals they would lessen its incidence in humans.

What was the objection to injecting a heifer with the live vaccine? If it were given three months before service it would be excreted before pregnancy, immunity resulting. He would not like the Ministry to take the live vaccine from his hands, for he had the greatest faith in it, under existing conditions, and with the present impractibility of adopting what he admitted was the ideal method of dealing with contagious abortion, *viz.*, the complete "Isolation" method. When possible he adopted the method in pedigree herds.

Concerning the agglutination test, they had to remember that they might get a negative result and that that was not to be relied upon. It was most important to take the first blood, if negative, about three weeks after calving, then six weeks, and to make a routine of it. To take the blood three days after calving and to expect the bacteriologist to say "yes" or "no," was absurd.

He never injected any animal which had previously aborted, but a month after normal calvings he used the live bacillus. When a good cow or heifer aborted, if she had not got much milk, he dried her off and had her served in eight weeks' time, because that was the time during which the bacillus was eliminated. When a good cow gave plenty of milk after aborting, he allowed her to remain in the herd after isolating her for 6—8 weeks; she was not vaccinated before service. In the case of a poor grade cow giving a fair amount of milk after aborting, she was not served again. After the eighth week of isolation they could bring them back; that would do no harm, because he was convinced that the Bacillus of Bang did not infect farming stock through the milk, but through the discharges from the uterus.

On many occasions the only cows which had not been injected with the live vaccine were those to abort. Was that not proof of its efficacy?

Replying to Mr. Broad, who enquired what were Mr. Stinson's views as to the dead vaccine, the latter said that he thought that at present it was of no use at all. If it were of any use, one would have to use it every month during pregnancy, more or less, and perhaps before service—whereas the live vaccine which had given such good results only needed one application.

Mr. Broad observed that during most years he had vaccinated a large number of cattle with the Ministry of Health's vaccine, and his experience was that it was very effectual indeed. He thought its best use was with the heifers before they were put to the bull at all.

Mr. Stinson replied that he thought that the best method for affected areas throughout England would be to have all the heifers done and served within three or four months afterwards. He believed that it would do a lot towards abolishing abortion from the country. There was another point; he believed that they sometimes got carriers in very old cows, and if he suspected an old cow he had her put out of the herd. In his view, old cows which had aborted two or three times should be cleared out. He also desired to stress the point that he was a great believer in strict isolation for two months after the act of abortion.

Mr. Adams stated that he practised in Gloucestershire, a milk-producing county, and he never suggested vaccination of the heifers in a large herd. His reason was that a large dairy farmer kept a part of his farm for his heifers only, and he considered that in that case, where the heifers were away from the herd, the vaccine should be withheld until they joined the herd, when he vaccinated them with the live vaccine after the first calving.

Mr. Stinson commented that he found that on some of the farms the cows and heifers were kept apart, and on these he pursued the same practice as did Mr. Adams; although it must be remarked, as previously stated, that the heifer was the ideal animal to vaccinate.

Mr. Steele-Bodger, when called on by the President, said that, as a visitor, he had hoped to be allowed to listen and learn, but he must respond to the request of the Chair. He was afraid, however, that his views were diametrically opposed to those of Mr. Stinson.

In herds which he was now treating, and which had previously been treated with the live vaccine, there was no doubt in his mind, or in the mind of the farmer, that there was a very considerable percentage of sterility, coincident with the use of the live vaccine. He had in his care many herds which had been treated over a number of years with the live vaccine and which he either treated with the dead vaccine or with no vaccine at all.

Personally, he thought that rigid isolation was the solution; the application of the agglutination test, certainly—but he thought that more important still was to calve everything in a box, whether or not one thought it was calving full time. In his opinion, in a very large percentage of cases, when abortion started on a farm it started through a cow calving a whole-time calf and being at the same time affected with the *Bacillus abortus* of Bang. These, to his mind, were the dangerous cows. He had had very good results from the use of the dead vaccine, but that might be due to the fact that they practised isolation and always treated after calving. Any animal that was at all suspicious had her placenta removed and was irrigated and, before she was put to service again, he always irrigated her uterus himself. As a result, very few animals had failed to conceive a second time or had aborted a second time.

He did not agree with Mr. Stinson when the latter said that a heifer's milk was negative after eight weeks only. Professor Bang himself had told him that he had isolated the *Bacillus abortus* from the milk six months after vaccination with the live vaccine.

Concerning the use of the abortoscope, in the same way that the Ministry would not accept responsibility for the results of using the live vaccine, so he objected to the use of an instrument which bore a related label—it was only to be used in cases which were really important. He knew of no case of abortion which was not important.

Mr. Stinson observed that he believed it was Mr. Steele-Bodger's method of isolation which was yielding his good results and not his use of the dead vaccine.

Mr. Steele-Bodger added that he was not clear why Mr. Stinson, holding the views that he did, did not use the live vaccine on pedigree herds, if it was 90 per cent. effective.

Mr. Stinson replied that he did generally use it in his pedigree herds, but he preferred thorough "Isolation" (two colonies) with repeated agglutination tests. Not many farmers, in his experience, had the convenience for splitting a herd into two parts, not to mention the expense of repeated blood tests—even in pedigree herds. The only disadvantage of which he knew attaching to the use of the live vaccine was that occasionally one got a synovitis—at least he suspected this. If they superimposed the live vaccine on a newly-aborted cow, when she was just at the peak of infection, he thought they might get sterility. He admitted that the calving boxes were admirable, but he found that he could not get farmers to provide them.

Mr. Margarson asked "What about the cows that have never aborted? They undoubtedly do abort after the use of the live vaccine."

Mr. Stinson replied that these cows would not abort unless one was getting a tremendous percentage of abortions in the herd, and he would not use the live vaccine on a farm where they were having a great deal of abortion, except in the heifers. He stated that otherwise abortions after the use of live vaccine were exceptional.

Mr. Margarson observed that undoubtedly, in Gloucestershire, it was a very general opinion amongst veterinary surgeons that the live vaccine did cause turning to the bull.

Mr. Stinson: I know that is a very general impression, but you would get the same if the vaccine was not used; if "controls" were kept there would be ample proof. Why forget that you are treating contagious abortion which, as is well known, is the chief cause of sterility?

Mr. Hall expressed himself as being a very hearty supporter of the use of the live vaccine, which he had employed on a large number of herds, both pedigree and ordinary, and containing both heifers and cows. In the herds that he had vaccinated he had found an average of three per cent. sterility, or turning to the bull, while he had had no case of abortion following the use of the live vaccine, even when applied to cows that had aborted more than once. When it had been applied to heifers that had never been to the bull, no turning to the bull had resulted, although the particular farm might have been highly infected with abortion.

Mr. Stinson related an instance in which a farmer had a large number of cows and wanted to be quite sure that he had not got contagious abortion on the place. He therefore called upon him to inoculate all the heifers and cows (some 60 or 70) with the live vaccine. He had not

one case of abortion, or one sterile cow or heifer.

Replying to Mr. Steele-Bodger, who asked how he knew that that result was due to the live vaccine and not in spite of it, the opener said that the point was that he was proving that it did not cause sterility. He hoped the Ministry would never withdraw the vaccine. He would like to see every heifer done, waiting for four months before she was served, in all the districts in which the disease existed.

Mr. Steele-Bodger observed that he was of opinion that contagious abortion was on the increase in the country; in his view, it was a source of greater economic loss to the farmer than tuberculosis or Johne's disease.

Mr. Webster remarked that he noticed that Mr. Stinson, thus far, had not paid any tribute to acquired immunity, and he would like to know whether the opener believed in it or not, because he knew of numbers of farms where acquired immunity existed, where, as soon as they brought in fresh cattle, the latter had aborted, but the old stagers had continued free. By vaccinating the newcomers they could still keep the herd free.

Mr. Stinson, in response, said that it was generally accepted throughout the profession that there was a great degree of immunity after abortion. A herd could be freed from abortion, speaking generally, by its action, if no fresh animals were introduced into the herd for four years. He should use the live vaccine on the newcomers.

Mr. Steele-Bodger having asserted that one member of the Ministry's staff at Weybridge was of opinion that infection was not only spread through the milk and the discharges but from the fæces, Mr. Stinson said that he was not a pathologist, but he could not accept that. Infection through the urine, fæces and milk was practically negligible; the infection came from the uterus.

Mr. Steele-Bodger asked if Mr. Stinson would use the live vaccine on a community bull, which was one source of protection against the menace of the " scrub " bull.

The reply was in the negative.

Mr. Masson stated that he had eliminated epizootic abortion from herds simply by isolation. He would like to know what the opener would do with the polluted dung; he always made his clients keep it separate and lime it.

Mr. Stinson observed that he did the same. He agreed that strict isolation was most important, where practicable.

Mr. Margarson stressed his former contention that the live vaccine was useless. Not only had he had a large number of abortions, but many could not be got in calf again. He was producing full-time calves for his client by the use of other vaccines.

Mr. Stinson countered with the statement that he had been using the live vaccine for twenty years, and it had only been not quite successful on one farm—an extraordinarily heavily-affected herd before vaccination was commenced—even then it immunised most heifers.

Mr. Steele-Bodger said that the live vaccine had been used for years in Denmark, but Professor Bang had informed him that he could not recommend it as he used to do, and he (the speaker) believed that Professor Bang had now come to isolation. The period of incubation was from three to four months, so that very often, after the first case of abortion, one would get cases every three or four months.

Mr. Atkinson remarked that he thought he was right in saying that the Commission on Contagious Abortion found that the period of incubation was from 35-174 days; it varied enormously.

Mr. Stinson stated that he had usually found the incubation period to be from 7 to 13 weeks.

At this stage, the Hon. Secretary read the following communication on the subject which had been received from Mr. J. W. Hall Masheter, of Newnham-on-Severn :—

" I am afraid that I shall not be able to be with you at Bath on Friday. This is a great disappointment to me, not only because I shall miss the demonstrations of Mr. Stinson, but on account of the discussion on contagious abortion in which, as you know, I am extremely interested.

" It is delightful to think that the younger members of the profession are taking things so seriously and making a solid attempt to clear up diseases which, up to the present time, have not been considered really seriously.

" We didn't know—and left it at that. If we got a blind teat—well, it was a blind teat, and, personally until quite recently, I advised the owner to leave it alone.

Since Stinson brought his operation forward I have no hesitation in operating on suitable cases and, I must say, with gratifying results.

" Regarding contagious abortion, in the first place, I do not agree that a " live " vaccine can have any favourable influence on any disease; on the contrary I regard it as extremely dangerous, even if it is attenuated, for who it to say—who can say—that it will not be exalted in virulence when passing through the animal body?

" It is wrong, in my opinion, and against immunising practice, to give, in the first place, a virus—at any rate in the field.

" The practice is to give an immunising agent followed by a virus, and it is a question, to my mind, as to whether a virus is any good: at any rate, I have come to that conclusion.

" I have often thought that the presentation of a virus after an immunising agent only *proves* that the immunity is so strong that it withstands the presentation of a virulent dose. Why should these live organisms be given if you have already got immunity? I think distemper vaccination proves this, or will prove it. Take South African horse sickness, anthrax, Texas fever, swine fever, distemper, hæmorrhagic septicæmia—all these are presented with a dose of immune serum before virus is given, whilst diphtheria, erysipilas and scarlet fever are both prevented and cured by the administration of an immune serum *without* virus. Again, if in contagious abortion you want a virus, why not give the immunising dose and let your cattle be all in contact? If there is anything in the virus giving a stronger immunity, you will get it in a natural way by this method.

" I am still of the opinion that an injection of killed organisms is the best preventative of contagious abortion, and shall continue to use it, at any rate until something better comes forward.

" My latest records are :—

September, 1928.

17 cattle in the herd. No abortions since, but vaccination was followed by the expulsion of *three* mummified fœtuses. *No sterility* in the herd up to the present.

October, 1928.

11 cows in the herd.

Six abortions between June and November, 4 of which occurred before vaccination and 2 immediately after.

No sterility.—All these cattle are either in calf or have calved down.

February, 1929.

11 cattle in the herd.

Two abortions before vaccination—none since.

No sterility.

April, 1929.

17 cattle in the herd.

Three abortions before vaccinating—none since.

No sterility.

Per contra.

In 1926 a client of mine had contagious abortion in his herd and the cows were vaccinated with live organisms.

16 cows in the herd.

13 sterile and sold out.

In February, 1927, I took twins from the 14th cow at five months.

Two carried their calves.

"In my experience, and I have been using a dead vaccine for something like 20 years, sterility is absent after the use of this vaccine.

"I have proved that sterility due to contagious abortion can be overcome by vaccination.

"I have also proved that vaccination will cause the expulsion of a mummified fœtus where there has been contagious abortion in a herd. I had three cases (recorded above) of this in one herd which had been affected with contagious abortion for five years.

"What is greatly wanted now is a reliable *in vivo* test for this disease."

The President (Mr. Watson) said that he would like to give the meeting his experience of vaccination—and he thought he agreed with both Mr. Stinson and Mr. Steele-Bodger.

When first that vaccine was issued to him—in 1913—the results on his first farm were almost too good to be true. Following 38 abortions one year, the 38 cows were vaccinated and the results were 100 per cent. successful. At about the same time he had 25 heifers and 50 cows, on one farm, which he vaccinated, but 13 of the animals had abcesses in the neck following vaccination. Moreover, 11 of the heifers aborted. But on another farm, with 25 cows, he vaccinated the lot, and they had 21 live calves the next year. So that his experience with the live vaccine had been somewhat contradictory. Use of the dead vaccine had been very limited, but in one big pedigree Jersey herd he used three doses at five day intervals on the animals. In that case they had been troubled with a few abortions every year, but after the employment of the dead vaccine they had only two abortions, while for four years after they had no more. That was a farm upon which isolation and disinfection were very efficiently carried out.

Mr. Stinson now voiced the view that it would be as well if the members recorded by vote their opinions on the question at issue—the use of the live, as opposed to that of the dead vaccine for contagious abortion. He always felt, with regard to those meetings, that their findings, if there were any, were left in a nebulous state in the absence of any recorded expression of opinion by vote. It was not always possible, from reading a report of a discussion in the *Record*, to determine what was the ultimate sense of the meeting.

Mr. J. R. Barker said that his views on that subject were fairly well-known to the members of the community and from debates in the *Veterinary Record*. In common with his friend Mr. Stinson, he was not afraid to state them, and he would state the opposite case as freely as Mr. Stinson had stated his case there that day.

Mr. Stinson had said that he had risen to advocate the use of the live vaccine, and had thereby weakened his case, and he (Mr. Barker) thought that he had put up a very weak defence for the live vaccine.

If it were to be a question of voting, he would like to try and persuade some of the members to vote with Mr. Steele-Bodger and himself.

There was a fundamental difference of opinion between Mr. Stinson and himself in this matter. If they took an organism which was pathogenic and introduced it into an animal which was susceptible to it, it would reproduce the disease. How were they going to detect its effects? Every man who was an advocate of the use of the live vaccine simply detected them by the presence or absence of the act of abortion. Those of them who had studied the matter from a different angle said that if they introduced the live organism either artificially or naturally they would get those effects. He went into the matter very thoroughly with the late Professor Glynn, and the effect of introducing the live organism was that the blood supply to the uterus became affected, and necrosis followed. It was immaterial whether the cow had a calf or fœtal membranes in the uterus; they were bound to get a serious effect on that organ by the use of the live vaccine. There would be a failure of the arteries supplying the uterus, necrosing the uterine glands with their uterine milk.

There could be no doubt that all those people who advocated the use of the live vaccine got results; so did other people, but they did not state them. Mr. Steele-Bodger got sterility following the use of the live vaccine, and Mr. Stinson got the same but he failed to put it on record. (Laughter.) It had been brought out there that afternoon, how strongly opposed even to each other were the advocates of the employment of the live vaccine. Some spoke of sterility in their herds, some of abortion, and some of 100 per cent. efficiency. At least, it was borne out then that the live vaccine was not reliable.

With regard to the dead vaccine, theoretically the dead vaccine was the best product to inject into cows to bring about an acquired immunity. Not only was the dead vaccine composed of the same protein as the live vaccine, but it had not the power to reproduce itself, and the immunity was established by the action of the protein on the host-protective substances.

If they searched more carefully for the effect upon the animal's usefulness, her breeding, of the use of the live vaccine, they would find that she was not so likely to breed such good calves, or to give such milk as was fit for consumption, to say nothing about the production of undulant fever in man, for which, in his opinion, the live vaccine had to bear some responsibility.

Mr. Stinson observed that Mr. Barker had asked the members to vote for the use of the dead vaccine as set forth by Mr. Steele-Bodger and himself as a result of persuasion. He considered the vote should be according to previous and practical experience with one or the other.

The President now asked for a show of hands, which resulted as follows:—

In favour of the use of the live vaccine	16
Against the use of the live vaccine	8
In favour of the use of the dead vaccine	5

The President now rose to say that he would like to move a very hearty vote of thanks to Mr. Stinson for his efforts on their behalf that day—not only for his demonstrations, which had been most interesting and instructive, but for his opening of the discussion which they had so much enjoyed and for his subsequent part in it.

The vote of thanks was passed with enthusiasm and Mr. Stinson, acknowledging the compliment, said that his visit had been a really delightful time for him.

Exhibit.—Mr. J. J. Aveston showed a terrier bitch presenting a condition of the skin which, over nine months, had defied all attempts at a cure. No parasites had been found, though the dog had received treatment for follicular mange over a long period. The condition would get better, but would invariably break out again. It originated after the delivery by the bitch of a dead puppy, carried over time, and coincident with metritis.

The opinion of the members was that the condition arose from toxæmia.

The proceedings terminated with an acknowledgment to the President for his conduct of the meeting, but before dispersing the members followed their usual sociable custom of taking tea together.

C. E. Perry, *Hon. Secretary.*

Yorkshire Division, N.V.M.A.

Social Meeting at Leeds.

On Saturday, April 12th, the Yorkshire Division held a Social Meeting at the Guildford Hotel, Leeds, when a company numbering over 80 sat down to dinner under the chairmanship of the President, Mr. F. C. Scott.

Mr. J. H. Taylor, Darlington (President of the North of England Division) and Mrs. Taylor, Mr. J. R. Rider, Darlington (Secretary North of England Division) and Mrs. Rider were present as guests of the Division. Others present included Mr. and Mrs. J. Clarkson, Mr. and Mrs. D. S. Rabagliati, Mr. G. E. Bowman and Mr. and Mrs. A. M'Carmick, sen.

Speech-making was reduced to a minimum, but after "The King," Mr. F. C. Scott, in happy vein, extended a hearty welcome to all guests and visitors present and Mr. G. C. Gaunt, in his usual racy style, proposed a vote of thanks to the committee (the President, Mr. W. Crawford, Mr. J. A. Dixon, and Hon. Secretary) responsible for the arrangements.

Dancing and whist were then carried on, dancing being much more popular, and excellent music was supplied by the orchestra. Prizes for whist and "spot" dance prizes were given by the President and the Vice-Presidents, Messrs. Rabagliati, Procter and Gaunt, and were presented by Mrs. F. C. Scott. The whist prizes were won by Mrs. J. A. Dixon, Miss Dixon, Mr. J. H. Taylor and Mr. Hutchinson, while those for the "spot" dances were gained by Mr. and Mrs. E. F. McCleery and Mr. J. S. Woodrow and Miss Woodrow.

The meeting proved to be a great success, the support given and attendance of the members being most gratifying, and it is hoped that a similar function will be held earlier next winter.

S. Sharp, *Hon. Secretary.*

Army Veterinary Service.

London Gazette—War Office—Regular Army.

April 22nd.—Major and Bt. Lt.-Col. W. H. Walker, D.S.O., O.B.E., to be Lt.-Col. (April 15th).

May 9th.—The following appointment is made:—Major C. K. Calder, R.A.V.C., to be Instr., Equitn. Sch.

Territorial Army.

Lieut. G. N. Gould resigns his commission (April 1st).

From The Veterinarian,

January, 1830.

The Symptoms and Cure of Navicular Disease in the Feet of Horses.

By Mr. James Turner, Veterinary Surgeon, Regent Street, London.

(Read at the Veterinary Medical Society, December 4th, 1829).

(*Continued from page* 422.)

We are called upon to treat the navicular disease under various degrees or shades of the same disorder. The case may be either acute or chronic. The lameness may be as sudden and considerable as sometimes proceeds from a fractured pastern or cannon bone; or it may be so slight as to require a close inspection on pavement to discern it. The disease may have been of very long or short duration, and yet exhibit lameness only in a slight degree.

A horse that had never shown an hour's lameness in his life leaves his stable in the morning perfectly sound, continues sound the greater part of his journey, and momentarily, without any apparent cause, drops violently lame; the rider as suddenly dismounts, with the impression that his horse has picked up a stone; takes up his foot, but looks in vain for the stone, or any other cause to account for this visitation; and many instances will this recall where horses were never subsequently restored to a sound working condition.

Such a lameness I conceive to be an actual lesion or rupture of some part of the delicate synovial membrane; and although the opportunities are few of dissection of these cases of lameness, when recent, yet I think I have observed that which will warrant me in stating that the membrane lining the tendon is more frequently the part first injured than the bone or its synovial covering, the spot being generally within or very near the concavity in the tendon which receives the corresponding convexity of the navicular bone. But when the bone or its articular cartilage exhibits disease, it is invariably confined to that portion of the under surface of the navicular bone which is placed nearest the sensible frog, and is most apparent towards the middle of the convex ridge of that bone.

From the facts that I have collected relative to groggy lameness, I am thoroughly convinced we have as much control over the early stage of this disease as we have over any less important organ when attacked with inflammation; for, complex as this joint confessedly is, and although composed of materials such as tendon, ligament, and cartilage, parts not remarkable for inherent renovating qualities, still I am convinced they possess enough for our purpose, provided we promptly perform two offices.

The first, and which is indispensable, consists in bleeding from the inflamed part till the quantity abstracted locally has affected the constitution generally.

I should like to be informed whether this plan of combating with local diseases of the inflammatory kind is practised in human surgery—that of abstracting *arterial* blood locally till the heart and system generally are affected.

I hope you will excuse the introduction of the following speculative remarks as to the *modus operandi* in this method of bleeding.

When inflammation exists in the limb of any animal to an alarming degree, it is not sufficient merely to lessen the contents of the inflamed vessels, and materially diminish their volume, but one thing more should be effected, precisely at this juncture, *viz.*, syncope, or that state of the heart which is a near approach to it; and thus, for one or more moments, the whole vascular system is interrupted or stopped; but reaction presently succeeds in the capillary vessels of the inflamed part, which, before the blood-letting, were on the point of rupture or loss of vitality,

arising from over-distension, and which have just time to contract vigorously on their diminished contents one second before the fresh charge is supplied from the great pump and arterial trunks.

It may be argued that the taking of one-half the quantity from the part affected, and the other half by general bleeding, in immediate succession, would answer the purpose equally well. I apprehend not, and for this reason, since I conceive that the influence of the operation on the inflamed part and on the heart is reciprocal by the plan I have proposed; but in the other method there would be this important difference, that while blood was flowing from the system generally, the reaction would commence in the capillaries of the inflamed part before syncope could be produced, and therefore just at the crisis their volume would have again become too great for the vigorous contraction before mentioned, and, consequently, the patient would only be relieved, instead of being cured.

The other indication of cure, and which is of no less importance to prevent the recurrence of inflammation within the navicular joint, consists in the return or *detrusion* of the coffin and navicular bones to their original and natural situation within the horny box; but even this having been accomplished, and the case no longer requiring treatment, we have yet another duty to perform; this is, to warn the owner against the *slow though certain* evil that will again accrue to this joint if the animal is subjected to long intervals of confinement in a stall, one of the remote or predisposing causes of this disease, and which is almost invariably applied to the greater proportion of the most valuable horses kept in London.

Servants have an aversion to dirty their horses' legs when their masters omit to work them.

For my remarks on this unnaturally quiescent state of the foot, together with the various concurring circumstances which establish this destructive and prevalent disease, I beg leave to refer you to my navicular paper, published in *The Veterinarian* for February last (1829).

(To be continued.)

Inspection of Dairy Cattle.

"In a circular recently issued to County Councils there is foreshadowed the likelihood of County Councils having to appoint additional veterinary inspectors of dairy cattle," says the *Aberdeen Press and Journal.*

"The circular is as follows :—

"Cattle in registered dairies must, in terms of Section 4 (2) of the 1914 Act, be inspected from time to time, and once at least in every year. In addition, veterinary inspectors may be, and in most areas have been authorised and instructed to examine cattle in unregistered premises coming within the terms of Section 5 of the Act. Experience has shown that if veterinary inspection is to attain a reasonable measure of success in preventing the retention of tuberculous and other deceased animals in dairy herds, with consequent danger to the milk supply, a higher frequency than one inspection a year is essential in both landward and burghal districts.

"The changes in the composition of herds due to buying and selling of animals, and the rapidity with which disease may develop in the individual animal, and spread to others in the herd, are obvious factors to be considered in fixing the frequency of inspection. Moreover, an interval of so long a period as a year between visits, must reduce considerably the educative value of the veterinary inspector's work. In burghs, four inspections a year are common, and in some instances there are monthly inspections.

"Many county districts have also recognised the advantages of increased inspection; but others, including some important dairying districts, have not yet provided for more than the statutory minimum. The Department take the view that in landward areas, a minimum of three inspections a year should be aimed at. They appreciate that increased inspection will, in the principal dairying counties especially, necessitate the appointment of additional staff, and it will be for County Councils to consider what number will be necessary to overtake the work."

In Parliament.

In the House of Commons recently, the following questions and answers were recorded :—

Horses (Export.)

Mr. Matters asked the Minister of Agriculture if he can now assure the House that the export of horses from the United Kingdom to the Continent for slaughter there has entirely ceased?

Mr. N. Buxton: There is no statutory prohibition of the exportation of horses to the Continent for the purpose of slaughter. I would remind my hon. Friend that full particulars as to the extent and nature of this trade have been given in recent answers to questions.

Mr. Freeman: Can the right hon. Gentleman assure us that the animals sent are killed by humane slaughter?

Mr. Buxton: That has been the case in recent times. In Holland humane slaughter is compulsory. All the British horses which have gone to Paris have been shot.

Pit Ponies.

Mr. Freeman asked the Secretary for Mines whether he is aware that a pit pony in Staffordshire has recently been brought to the surface after having been down a mine continuously for 29 years; and whether he will arrange that all ponies working down mines shall be brought to the open fields at least a fortnight each year?

The Secretary for Mines (Mr. Ben Turner): If I am right in assuming that my hon. Friend is referring to a pony named "Lloyd George," a picture of which appeared in the Press on April 16th, the Press report is inaccurate. That pony is 18 and not 29 years of age, and except for a month or two has always been stabled on the surface. I am in sympathy with the object of the proposal in the second part of the question, and I hope that colliery managements will do what they can in that direction; except during a period of continued warm weather pit ponies would suffer and not benefit from being brought to the surface. For this and other reasons it would not be practicable to make any general or standing rule.

Viscountess Astor: If these ponies have to work under the surface, would it not be almost better to keep them down continuously, because, it seems to me, for them to come up and then have to go down is almost worse than not coming up?

Mr. Turner: One of the inspectors has given me the following information; that some of the ponies were brought up on Good Friday for a week in the fields, but that they shivered with the cold and were taken back into the pit for their own safety.

Mr. Freeman: Is it not a fact that pit ponies are not the only ones who shiver on holidays?

Viscountess Astor: Is it not a fact that pit ponies cannot talk on holidays?

On a later occasion, Mr. Freeman asked the Secretary for Mines whether he can give the number of mines in which no bedding is provided for horses and ponies employed below ground in each coal district; the number of mines in which bedding is provided and the kind of bedding given; and whether he will make a regulation to ensure an adequate daily supply of clean bedding for all horses and ponies in underground stables?

Mr. Turner: Sawdust and moss litter are the materials most commonly used for bedding horses in underground stables. No statistical information is available, and I have no general information which would lead me to think that it is necessary to make a regulation to deal with the matter.

Mr. Freeman asked the Secretary for Mines whether he can give the number of mares employed below ground in mines; whether he has any knowledge of foals being born below ground; and whether he will make a regulation prohibiting the use of mares underground?

Mr. Turner: The answer to the first two parts of the question is in the negative. With regard to the third, I am satisfied that proper and humane supervision is already exercised, and I have no information which would

lead me to think there is any necessity for such a regulation.

Mr. Freeman asked the Secretary for Mines whether he can state the number of horses and ponies employed in mines which have been used underground for ten or more years; the average working life of horses and ponies employed below ground in mines; and whether he will make a regulation to prevent horses and ponies over 12 years of age being used in mines?

Mr. Turner: I regret that the figures asked for in the first two parts of the question are not available. With regard to the third part, the present regulations prohibit the employment of horses, whatever their age may be, immediately they become unfit for the work, and I think they are sufficient and effective.

Pit Ponies (Imports).

Mr. Freeman asked the President of the Board of Trade whether, in future, he can arrange that in keeping statistics of live animals imported he can show separately the number of horses and ponies intended for use in mines; and the numbers actually employed in mines which have come in?

Mr. W. R. Smith: The information obtained at the time of importation of horses and ponies does not show the purpose for which the animals in question are to be employed, nor do I think that reliable data as to the uses to which imported horses and ponies are in fact put would be secured by requiring a declaration to be made by the importers, who in many cases would only be importing for purposes of future sale. As regards the last part of the question, I do not think that the value of the information which might be obtained would be of sufficient value to justify the time and money spent in securing it.

Mr. Freeman asked the President of the Board of Trade whether he can state the total number of ponies imported each year into this country during the last 10 years; the several countries from which the ponies were sent and the total number sent each year from each country; the purposes for which the ponies were intended in this country; the approximate average per head each year of these ponies; and whether the average cost per head is lower than that of ponies bred in various parts of England and Wales?

Mr. W. R. Smith: The classification of live animals in the trade statistics does not provide for the separate enumeration of ponies, which are included with the horses. It is impossible, therefore, to give the information desired, but my hon. Friend may find of interest in this connection the detailed returns of the imports of horses into this country during the years 1924-28, which are given on pages 418-9 of Volume II of the Annual Statement of the Trade of the United Kingdom.

Psittacosis.

Mr. Mander asked the Minister of Health whether it is the intention of the Government to make psittacosis a notifiable disease, in accordance with the recommendations of the health section of the League of Nations?

Mr. Greenwood: In view of the obscure nature of psittacosis, I am advised that it is unlikely that any useful purpose would be served by compulsory notification of the disease. Medical practitioners and others have already been invited to report suspected cases of psittacosis to the local medical officer of health or to my Department, and I have no reason to suppose that this procedure is not being followed. The recommendation in favour of notification to which the hon. Member refers is, so far as I am aware, only an expression of opinion by the compiler of a recent review of psittacosis published in the Monthly Epidemiological Report of the Health Section of the Secretariat of the League of Nations.

The Free State Minister for Public Health has issued an order dated May 3rd prohibiting the importation of parrots into the Free State.

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

May 19th.—Meeting of the Editorial Committee, N.V.M.A., 4.30 p.m., at 2 Verulam Buildings, Gray's Inn, W.C.1.

May 21st.—Meeting of the Lancashire Division, N.V.M.A. at Manchester.

May 21st.—Meeting of the West of Scotland Division, N.V.M.A., at Glasgow.

May 22nd.—R.C.V.S. Voting Papers and Annual Report issued.

May 29th.—R.C.V.S. Voting Papers due to be returned.

June 5th.—**R.C.V.S. Annual General Meeting, Royal College of Surgeons, Dublin.** Followed by Annual General Meeting of the Victoria Veterinary Benevolent Fund. R.C.V.S. Annual Dinner.

June 13th.—D.V.S.M. Written Examinations.

June 16th.—D.V.S.M. Oral Examination commences.

July 2nd.—R.C.V.S. Quarterly Meetings.

July 3rd.—R.C.V.S. Quarterly Meetings.

July 4th.—R.C.V.S. Quarterly Meetings.

July 7th.—R.C.V.S. Membership Examination commences.

AUGUST 4th to 9th.—11th INTERNATIONAL VETERINARY CONGRESS, CENTRAL HALL, WESTMINSTER.

R.C.V.S. Annual Meeting and Dinner.

Principal J. F. Craig, President of the Royal College of Veterinary Surgeons, sends us the following:—

"As your readers will be aware from recent notices in your columns, the Annual Meeting and Dinner of the R.C.V.S. are to be held in Dublin this year.

"The Annual Meeting will be held at the Royal College of Surgeons, St. Stephen's Green, Dublin, at 12 noon, on Thursday, June 5th next. The Annual Dinner will also be held on the evening of the same day at 7.30 and in the same building. A small committee has been formed to make the necessary arrangements and these arrangements are now well in hand. The price of the dinner is 25s. and tickets may be obtained from Professor J. J. O'Connor, M.R.C.V.S., Royal Veterinary College of Ireland, Ballsbridge, Dublin.

"It is expected that a number of distinguished guests will attend the dinner.

"I trust that members of the profession will turn up at the meeting and dinner in representative numbers and I may add that those coming from outside the Irish Free State will receive a hearty welcome.

"A list of hotels will be forwarded in a short time to give members intending to be present the information they may require regarding accommodation during their visit.

" It is interesting to recall that Dublin was once before the city in which these two functions were held, *viz.*, in 1912, during the presidency of the late Professor Mettam."

. . . . .

In support of the President's words, we wish to express the hope that as many members of the profession as possible will make a point of going over to Dublin for the Annual Meeting and Dinner. At the present juncture, when negotiations are proceeding for the purpose of preserving the unity of the profession in these Islands, it would be undoubtedly helpful if a representative gathering of British members were present to support the President on this occasion.

Members travelling *via* London should send in their names at once to the Secretary of the College at 10 Red Lion Square. He will then be able to inform them whether it has been found possible to arrange for any concession as regards railway fares.

R.C.V.S. Obituary.

O'Leary, Arthur J., Larsfield Street, Limerick, I.F.S. Graduated N. Edin. December 21st, 1897. Died May 1st, 1930, age 55 years.

Stephens, Joseph, D.V.S. (McGill), 2 Beatrice Road, Finsbury Park, London, N.4. Graduated London, December 22nd, 1924. Died May 4th, 1930, aged 68 years.

Stevenson, Robert, Spring House, Normacott, Longton, Staffs. Graduated, Glasgow, April 13th, 1880. Died May 6th, 1930, aged 80 years.

Wagstaffe, W. J., Fairholme, Norman Road, Ramsgate, Kent. Graduated London, December 20th, 1887. Died May 5th, 1930, aged 63 years.

The Late Dr. J. Stephens.

Mr. Joseph Stephens, D.V.S., M.R.C.V.S., of 2 Beatrice Road, Stroud Green, N.4, who was found dead in his bed on the 4th inst., was 68 years of age, a graduate of McGill University, Canada, and the R.C.V.S.

Dr. Stephens emigrated from Ireland (north) to Canada when quite young, where, by hard work and energy, he saved sufficient money to enter McGill Veterinary College. After graduating, he was for many years associated with Mr. Smith, as Smith & Stephens, in exporting pedigree Clydesdale Stallions to Canada and importing Canadian horses to England, where he sold as many as 300 per week. On the outbreak of the South African war, this trade ceased, and after the war, horses were not in request due to the use of petrol in 'buses, and electricity in trams.

About that time, an agitation arose as to the examination of horses for exportation to the Continent, and Sir Vansittart Bowater, M.P., then Chairman of the Cattle Markets Committee of the Corporation of London, authorised the late James King, M.R.C.V.S., then V.O. to the City Corporation, to select an officer to act as Inspector for this horse-traffic. Dr. Stephens was selected, and no one could have been better fitted for the work, his experience of shipping horses giving him special knowledge of the requirements on board.

Continuing his work, later as assistant to Col. Young, he was unfortunately knocked down while examining horses intended for Remounts, and although everything was done to preserve his leg, it had to be amputated. The Ministry of Agriculture had taken over the examining of horses for export, and Dr. Stephens was employed, until he died, as " Shipping Officer," assisting Mr. Peacey, F.R.C.V.S. He was also Certifying Veterinary Officer for the export of animals for the Canadian and Australian Governments.

After studying during the Final Year Course at the London College, he graduated M.R.C.V.S., and he always spoke in the highest terms of appreciation of the great kindness shown to him by all the teaching staff at Camden Town and the examiners.

Dr. Stephens was of a cheerful and lovable disposition. He suffered much, but was always bright and jocular. Loyal to those whom he served, honourable and trustworthy in word and deed, he was respected by all with whom he came in contact.

This was amply shown by the many wreaths sent from all the Shipping Companies, the Ministry of Agriculture, Mr. Minter (Hay's Wharf and Dock Co., Ltd.), the shippers of horses, the Meat Inspection Department, City of London, and friends to Islington Cemetery, East Finchley, where he was buried, on Saturday, 10th.

Among those who attended were: Mr. Peacey, F.R.C.V.S., representing the Ministry of Agriculture; Col. T. D. Young, representing the R.C.V.S. and the N.V.M. Association; Mr. J. A. Scott, Editor *Meat Trades Journal*; Mr. P. Crossey, Mr. Hyde, Mr. Adams; Capt. Blake, Secretary, Primrose League; Mr. Cole, Mr. Wright, and many relatives, including his son, Mr. Edmund Stephens. His other son, Mr. Russell Stephens, is in Canada, and was unable to be present.

Our sympathy goes out to his widow, in the loss of a husband who, in the words of Mr. Holmans, M.R.C.V.S., "was a great sufferer from the effects of his injury, and created wonder as to how he got about and did what he did. A more upright, conscientious, hard-working man never lived."

The Late Mr. Wagstaffe.

Mr. Wagstaffe was in practice at Holmes Chapel, Cheshire, for ten years, during which time he held the appointment of Lecturer on Veterinary Science to the Cheshire County Council, also to the Agricultural College, and was Veterinary Inspector to the Cheshire County Council.

For the last 30 years he was practising in Macclesfield, Cheshire, and during that time held the appointments of Veterinary Inspector to the Borough of Macclesfield, also Veterinary Inspector to the Cheshire County Council.

He was well-known in Macclesfield and district, having had a large and busy practice.

He leaves a widow and two sons.

Owing to ill-health Mr. Wagstaffe retired from practice in 1929 and took up his residence at Ramsgate.

Death of Mr. A. Goodall, F.R.C.V.S.

The Union Veterinary Department has sustained a very serious loss by the sudden death of Mr. A. Goodall, F.R.C.V.S., Sub-Director of Veterinary Services for the Union, and Lecturer in Municipal Veterinary Hygiene in the Onderstepoort Veterinary Faculty. Mr. Goodall left Pretoria by car for Hermanus on his annual holiday, and was accompanied by Mrs. Goodall. While near Wolmaranstad he was seized with a stroke, and died in the hospital there.

Mr. Goodall was in his fiftieth year and was born in England. He joined the South African Service as a District Veterinary Surgeon in the Cape Province in October, 1902. In October, 1914 and until 1918, he was on active service as a Major in the South African Veterinary Corps, serving chiefly in the German South-West campaign. In 1920 he was promoted Officer-in-Charge of Agriculture and Veterinary Services at Windhoek.

Mr. Goodall was transferred to the Eastern Cape Division, with headquarters at Queenstown, in 1924 as Senior Veterinary Officer for that area, and the same year was promoted to Assistant Principal Veterinary Officer for the Union, with headquarters at Pretoria. In 1927 Mr. Goodall held the position of Sub-Director of Veterinary Services for the Union.

The deceased gentleman was closely associated with Dr. P. R. Viljoen, Deputy-Director of Veterinary Science and Animal Husbandry for the past three years, and rendered invaluable service to the Government, collaborating with Dr. Viljoen on East Coast fever and similar problems.

Personal.

Much sympathy will be felt with Major D. S. Rabagliati, Chief Veterinary Officer, West Riding, in the serious injury sustained by his brother, Lieut.-Col. C. E. C. Rabagliati, M.C., at Brooklands Motor Racing Track, on Friday evening of last week, when he was involved in the tragic accident in which his mechanic and one of the spectators were killed. Col. Rabagliati sustained very serious head injuries, but we are glad to learn that he is making as satisfactory progress as can be expected.

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Appointment.—Mr. W. T. Rowlands, M.R.C.V.S., who was a student of the London College, and is now taking the D.V.S.M. course at Manchester University, has been appointed Assistant Advisory Officer, University College of North Wales, Bangor.

This appointment is made possible by contributions, for extension of Veterinary Advisory work, made by the six Counties of the North Wales province.

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Presentation.—" It was a happy thought that prompted a number of local gentlemen to organise a presentation to Mr. H. G. Lepper, of Aylesbury, on the occasion of his eightieth birthday, as few gentlemen in the Vale of Aylesbury are held in such high esteem," says a local paper. " At the conclusion of a meeting at the King's Head Hotel, Aylesbury, Mr. Lepper was taken by surprise when he was presented with an illuminated album, containing the names of the subscribers, and a solid silver salver. Mr. Lepper, as a member of the well-known firm of veterinary surgeons, has made a host of friends, and he has for many years acted as hon. veterinary surgeon to the County and other Agricultural Societies in the district.

" The album was a beautiful piece of craftsmanship by Messrs. Hazell, Watson & Viney, Ltd., Aylesbury. It was bound in Royal blue morocco leather, with the initials ' H. G. L.' embossed in gilt. On the first page is the following inscription, which is also engraved on the salver : ' Presented to H. G. Lepper, Esq., M.R.C.V.S. With congratulations and best wishes on his eightieth birthday, May 4th, 1930. From his farmer and a few other friends in the Vale of Aylesbury and district.' "

Errata.—Mr. Oscar Stinson (Appleby) writes :—"In my letter published in last week's *Record*, it should read at the end of the letter : ' one pint,' not ' one part '; also ' two or three pints,' not ' two or three parts.' "

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

Animal Diseases Research Association.

To the Editor of The Veterinary Record.

Sir,—I shall be glad if you will allow me to correct a statement made by Professor Gaiger in his letter to you which appeared in your issue of April 26th.

Professor Gaiger stated that the " anonymous gift " to the A.D.R.A. is not a gift of Capital but merely an annual gift of interest to the amount of £500. Professor Gaiger has been misinformed on this matter. The gift to the A.D.R.A. is a Capital one and is of an amount of rather over £10,000.

Yours faithfully,
A. R. Milroy, *Secretary.*

Moredun Institute,
Gilmerton,
Edinburgh.
May 9th, 1930.

R.C.V.S. Council Election.

To the Fellows and Members of the Royal College of Veterinary Surgeons.

Gentlemen,—Having been nominated as a candidate for one of the vacancies in the Council of the R.C.V.S., I venture to appeal for your support at the forthcoming election.

During the last two years, I have served on the council of the N.V.M.A., and on many of its sub-committees and have consequently been brought into close touch with many matters of vital concern to the profession, and it is my earnest wish to continue to work for the advancement of our profession.

There is a feeling that the members of the Council are recruited from too small an area and that it is desirable that there should be increased representation from the country districts and particularly from the North of England and Scotland generally. It is chiefly on these grounds that I solicit support for my candidature.

If elected, I shall do my utmost to further the interests of every section of the profession.

Yours faithfully,
R. Simpson.

The Courts,
Carlisle.
May 1st, 1930.

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Gentlemen,—Having been nominated by our President as a candidate for Council at the ensuing election, may I take this opportunity of tendering you my best thanks for your support in past elections and may I solicit the same at the forthcoming election.

I have the honour to be,
Your obedient servant,
J. C. Coleman.

The Limes,
Croft Road,
Swindon.
May 11th, 1930.

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Gentlemen,—I have again been nominated by General Sir John Moore for election to the Council of The Royal College of Veterinary Surgeons, and in soliciting the support of my professional colleagues, I would remind them that, should they vote me to a seat on that body, I would be representing, in particular, the views and interests of the general practitioner.

Having served the National Association for some eight years as a member of its Council, and as a member of three standing committees, besides several sub-committees, I have, I think, in some measure fitted myself for the greater responsibility associated with membership of the Council R.C.V.S.

It would be my earnest endeavour, as hitherto, to uphold the dignity and advancement of my profession, and the knowledge gained from previous veterinary political service could not fail to guide me in the future deliberations of the controlling Body.

I am, Gentlemen,
Yours faithfully,
Hamilton Kirk.

" Croylands,"
Finchley Road,
London, N.W.11.

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Gentlemen,—The Midland Counties Veterinary Medical Association solicit the favour of your votes on behalf of the following members of the Association at the forthcoming election of Council, R.C.V.S., *viz* :—R. Hughes, Esq., F.R.C.V.S., Oswestry; J. L. Cormack, Esq., M.R.C.V.S., Coventry.